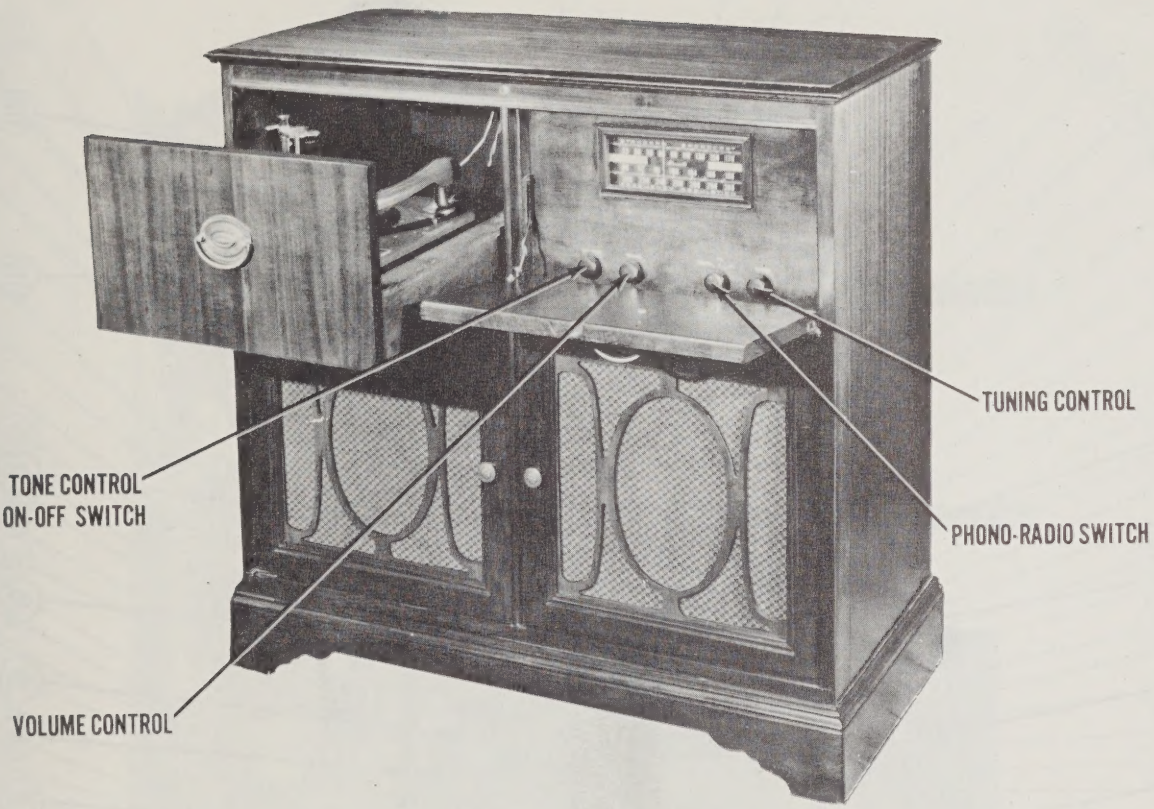
CONTENTS

TRADE NAME	MODEL	FOLDER NO.
Aircastle	G-724	4822-25
Aircastle	7B	4822-1
Airline	74GSG-8810A, 74GSG-8820A	4822-2
Airline	84GCB-1062A	4822-26
Arvin	242T, 243T, (Ch. RE-251)	4822-3
Bendix	65P4	4822-4
Crosley	9-201, 9-202M, 9-203B	4822-5
Delco	R-1244, R-1245, R-1246	4822-6
Dewald	B-403	4822-7
Firestone	4-A-41 (Code No. 291-7-576)	4822-8
Hallicrafters	400, 406, 409, 410, 411, 412	4822-9
Magic Tone	510	4822-10
Magnavox	CR-210A, CR-210B	4822-11
Masco	MA-75N	4822-27
Masco	MAP-105N	4822-12
Motorola	58A11, 58A12 (Ch. HS-158)	4822-13
Operadio	1A65	4822-14
Philco	49-503	4822-15
Philco	49-905	4822-16
RCA (Victor)	8X521 (RC-1066), 8X522 (RC-1066A)	4822-17
Recordio	7D42, 7D44 (Ch. 7D1)	4822-18
Scott	6T11, 6T11A Television Receiver	4822-19
Silvertone	8080 (Ch. 101.852)	4822-20
Tele-Tone	185 (Ch. Series AH)	4822-21
Truetone	D2626 (Fact. No. 457-2)	4822-22
Zenith	4G800Z, 4G800WZ, 4G800YZ (Ch. 4E41Z)	4822-23
Zenith	8H832, 8H861 (Ch. 8E20)	4822-24

AIRCASTLE MODEL
7B



AIRCASTLE MODEL
7B

AIRCASTLE MODEL 7B

TRADE NAME	Aircastle, Model 7B
SUPPLIER	Spiegel Inc., 1061 W. 35th St., Chicago, Ill.
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Antenna
TUBES (ELEVEN)	Types, 6BA6 FM RF Amp., 7Q7 AM Converter, 7F8 FM Converter, 7AH7 IF Amp., 6SH7 FM 2nd IF Amp., 7A6 FM Ratio Det., 6SQ7 Det.-AVC-AF, 7F7 2nd AF Phase Inv., (2) 7C5 Power Output, 5Y3GT Rectifier.
POWER SUPPLY	105-125 Volts AC
RATING	.8 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1700KC FREQ. MOD. 88 - 108MC

HOWARD W. SAMS & CO., INC. **Indianapolis Indiana**

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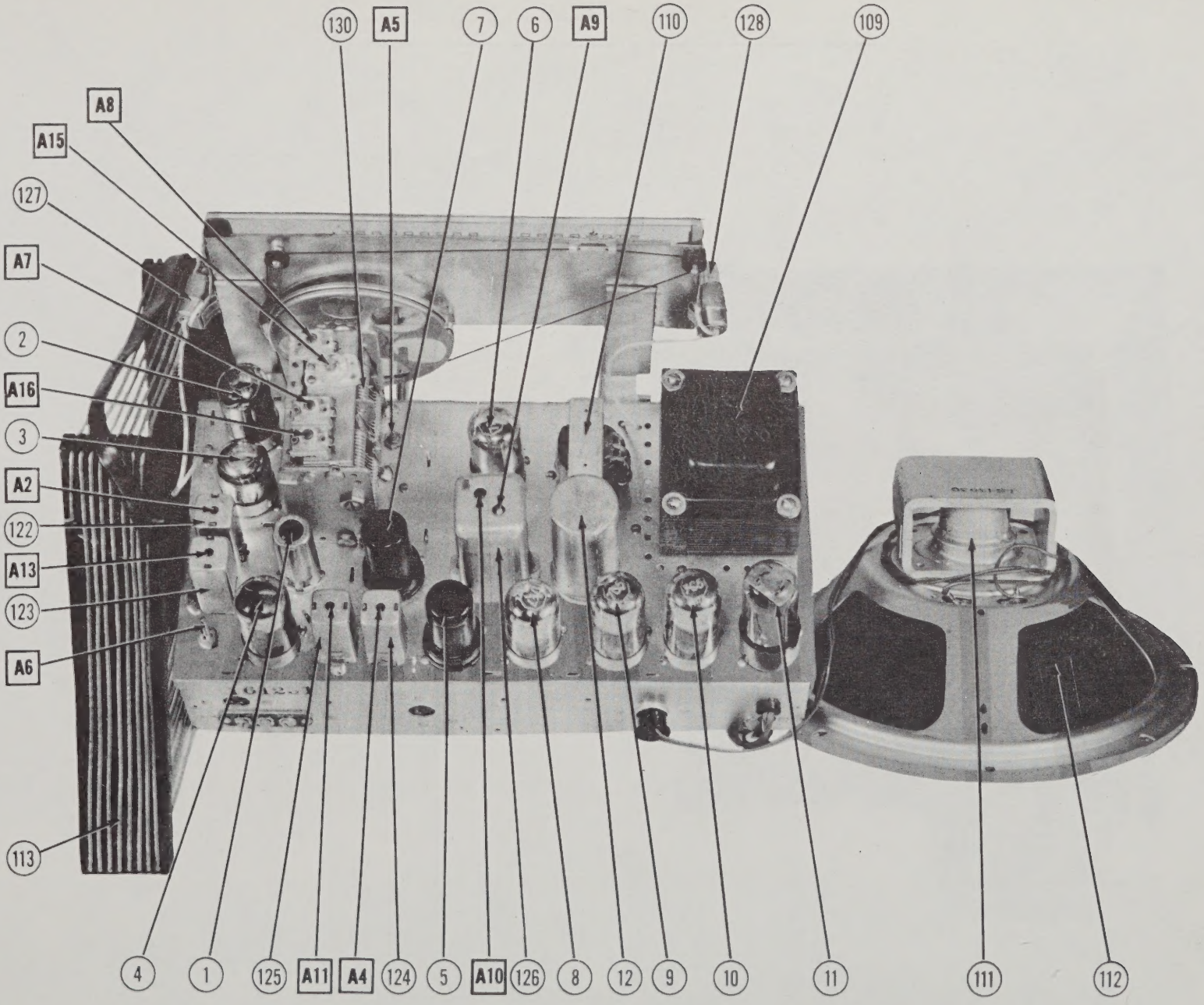
DATE 12/48-#4822-1 SET #52-FOLDER #1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A15
127
A7
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A13
123
A6
113
4
1
125
A11
A4
124
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A10
126
8
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9
10
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112

A
A1
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A12
A14
B
C
D

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM RF Amp.	6BA6	6BA6	7BK	
2	AM Converter	7Q7	7Q7	8AL	
3	FM Converter	7F8	7F8	8BW	
4	IF Amp.	7AH7	7AH7		
5	FM 2nd IF	6SH7	6SH7	8BK	
6	FM Ratio Det.	7A6	7A6	7AJ	
7	Det.-AVC-AF	6SQ7	6SQ7	8Q	
8	2nd Audio Phase Inv.	7F7	7F7	8AC	
9	Power Output	7C5	7C5	6AA	
10	" "	7C5	7C5	6AA	
11	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
12A	40	450		AF88J	UP4445	DY-2x40-450	EL-240	▲ Filter
B	40	450						"
13	8	450		PRS450/8	BR845	M-8-450	UT-8	"
14	4	450		PRS450/4	BR445	M-4-450	UT-4	Stabilizing Cap.
15	.025	400		484-03	DT4S3	MPH-6-02	TC-13	Line Filter
16	.025	400		484-03	DT4S3	MPH-6-02	TC-13	" "
17	.025	400		484-03	DT4S3	ST-6-03	TC-13	Audio Coupling
18	.025	400		484-03	DT4S3	ST-6-03	TC-13	" "
19	.05	200		484-05	DT2S5	ST-4-05	TC-15	" "
20	.02	200		484-02	DT2S2	ST-4-02	TC-12	Tone Comp.
21	.05	200		484-05	DT2S5	ST-4-05	TC-15	Audio Coupling
22	.5	200		484-.5	DT2P5	ST-2-5	TC-5	Bias Filter
23	.01	150		484-01	DT2S1	ST-4-01	TC-11	2nd IF Cathode Bypass
24	.1	200		484-.1	DT2P1	ST-2-1	TC-1	AVC Filter
25	.02	400		484-02	DT4S2	ST-4-02	TC-12	RF Bypass Power Supply
26	.02	400		484-02	DT4S2	ST-4-02	TC-12	Decoupling
27	2000			1467-002	1W5D2	MW.5-22	1FM-22	Output Plate Bypass
28	2000			1467-002	1W5D2	MW.5-22	1FM-22	" " "
29	250			1468-00025	5W5T25	MO.5-325	1FM-325	Tone Compensation
30	250			1468-00025	5W5T25	MO.5-325	1FM-325	Tone Comp.
31	5000			1467-005	1D5D5	MW.5-25	1FM-25	" "
32	6800			1467-006	1D3D7	MW.3-27	1FM-27	Audio Coupling
33	250			1468-00025	5W5T25	MO.5-325	1FM-325	Ratio Det. Load Cap.
34	3000			1467-003	1W5D3	MW.5-23	1FM-23	De-emphasis
35	1500			1467-0015	1W5D15	MW.5-215	1FM-215	2nd IF Plate Decoup.-Cer.
36	1500			1467-0015	1W5D15	MW.5-215	1FM-215	2nd IF Screen Byp.-Cer.
37	1500			1467-0015	1W5D15	MW.5-215	1FM-215	RF Bypass-Cer.
38	100			1468-0001	5W5T1	MO.5-31	1FM-31	Diode RF Filter
39	100			1468-0001	5W5T1	MO.5-31	1FM-31	" " "
40	1500			1468-0015	1W5D15	MW.5-215	1FM-215	AVC Filter-Cer.
41	6800			1467-006	1D3D7	MW.3-27	1FM-27	1st IF Decoupling
42	1500			1467-0015	1W5D15	MW.5-215	1FM-215	1st IF Cathode Byp.-Cer.
43	1500			1467-0015	1W5D15	MW.5-215	1FM-215	FM Conv. Plate Decoup.-Cer.
44	1500			1467-0015	1W5D15	MW.5-215	1FM-215	FM Osc. Plate Decoup.-Cer.
45	25			1468-000025	5W5Q25	MO.5-425	MS-425	Osc. Grid Cap.
46	2							Osc. Coupling-Cer.
47	1500			1467-0015	1W5D15	MW.5-215	1FM-215	Conv. Cathode Bypass-Cer.
48	1500			1467-0015	1W5D15	MW.5-215	1FM-215	RF Coupling-Cer.
49	47			1468-00005	5W5Q5	MO.5-45	1FM-45	" " "
50	1500			1467-0015	1W5D15	MW.5-215	1FM-215	RF Decoupling-Cer.
51	1500			1467-0015	1W5D15	MW.5-215	1FM-215	RF Screen Bypass-Cer.
52	1500			1467-0015	1W5D15	MW.5-215	1FM-215	RF Cathode Bypass-Cer.
53	500			1468-0005	5W5T5	MO.5-35	1FM-35	RF Coupling
54	1500			1467-0015	1W5D15	MW.5-215	1FM-215	Filament Bypass-Cer.
55	1500			1467-0015	1W5D15	MW.5-215	1FM-215	" " "
56	1500			1467-0015	1W5D15	MW.5-215	1FM-215	" " "
57	100			1468-0001	5W5T1	MO.5-31	1FM-31	Phono Tone Comp.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
110	4000Ω CT	3.6Ω	540Ω CT	.4Ω	ZA-15.019	A-3823	T22S60‡	A-2901	‡Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
	FIELD	VC IMP.		ST-119*		*Replace output transformer to match 6-8 voice coil.
111	PM	3.6Ω	LS-13939	Mod. P10-T	10A31	
	CONE DIA.	VC DIA.				
112	9½"	1"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: MEISSNER PART No.	
113	BC Ant.Loop		.3Ω	LA-5.018		
114	FM Di-pole Ant.			LA-5.010		
115	BC Loop Load.Coil		2.2Ω	LA-2.273	14-1056	
116	FM Ant.Coil	0Ω	0Ω	LA-2.241		
117	FM RF Plate Coil		.5Ω	LA-2.279		
118	FM RF Coil		0Ω	LA-2.243		
119	FM Conv. Plate Coil		.1Ω	LA-2.242		
120	BC Osc.Coil	.3Ω	5.5Ω	LA-2.221	14-1060†	†Add 50 MMFD cap. from high side tuning cap. to osc. grid.
121	FM " "	0Ω	0Ω	LA-2.222		
122	AM 1st IF	16Ω	16Ω	ZB-2.275	16-6678	
123	FM " "	.7Ω	.7Ω	ZB-2.276		
124	AM 2nd IF	16Ω	16Ω	ZB-2.275	16-6678	
125	FM " "	.7Ω	.7Ω	ZB-2.276		
126	FM Det. Trans.	.8Ω	.2Ω	ZC-2.278		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
127	Bayonet	6-8	0.15	Brown			Type 47
128	"	6-8	0.15	"			" "

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: ASTATIC PART No.	REMARKS
129		L-70A	L-70 Original Part

MISCELLANEOUS

ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
130	Switch	SA-12.060	Band
131	Tuning Gang	C-6-042	(50-500MMF, 50-500MMF)

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	
58A	500KΩ	½	RA-9.069	D18-133X	T-88	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 58A per instructions
59A	1 Meg.	½	RA-9.070	D13-137	M-63-Z	Tone Control
B	Shaft		Not Req.	A	Not Req.	Attach to 59A per instructions
C	Switch		" "	41	SW-A	" " " " "

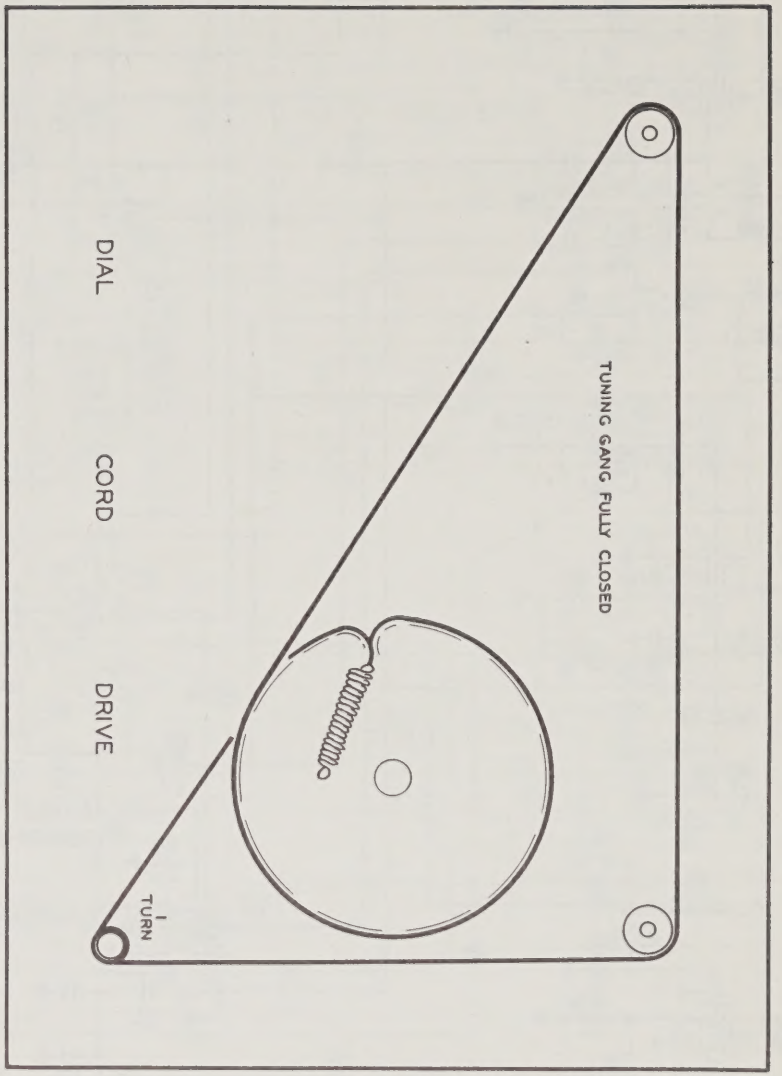
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIRCASTLE PART No.	IRC PART No.	
60	100Ω	½			Br.-Blk.-Br. RF Cathode
61	22KΩ	½		BTS-22K	Red-Red-Or. RF Screen
62	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. FM Conv. Grid
63	47Ω	½			Yl.-Vi.-Blk. FM Conv. Cathode
64	470Ω	½		BTS-470	Yl.-Vi.-Br. FM Conv. Cathode
65	2000Ω	½		BTS-2200	Red-Red-Red FM Conv. Plate Decoup.
66	22KΩ	½		BTS-22K	Red-Red-Or. FM Osc. Grid
67	2200Ω	½		BTS-2200	Red-Red-Red FM Osc. Plate Decoup.
68	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. AM Conv. Grid
69	1200Ω	½		BTS-1200	Br.-Red-Red Ant. Loading
70	15KΩ	2		BT-2-15K	Br.-Grn.-Or. AM Conv. Decoupling
71	22KΩ	½		BTS-22K	Red-Red-Or. AM Osc. Grid
72	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
73	2.4 Meg.	½		BTS-2.2 Meg.	Red-Yl.-Grn. " "
74	100Ω	½			Br.-Blk.-Br. 1st IF Cathode
75	2000Ω	½		BTS-2000	Red-Blk.-Red 1st IF Decoupling
76	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Diode Filter
77	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Diode Load
78	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. AVC Network
79	220KΩ	½		BTS-220K	Red-Red-Yl. " "
80	100Ω	½			Br.-Blk.-Br. 2nd IF Cathode
81	22KΩ	½		BTS-22K	Red-Red-Or. 2nd IF Screen
82	1200Ω	½		BTS-1200	Br.-Red-Red 2nd IF Plate Decoupling
83	22KΩ	½		BTS-22K	Red-Red-Or. De-emphasis
84	12KΩ	½		BTS-12K	Br.-Red-Or. Ratio Det. Diode Load
85	12KΩ	½		BTS-12K	Br.-Red-Or. " " " "
86	220KΩ	½		BTS-220K	Red-Red-Yl. AVC Network
87	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Bias Network
88	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AVC Network
89	22KΩ	½		BTS-22K	Red-Red-Or. Tone Comp.
90	10KΩ	½		BTS-10K	Br.-Blk.-Or. " "
91	6.8 Meg.	½		BTS-6.8 Meg	Blue-Gray-Grn. 1st AF Grid
92	220KΩ	½		BTS-220K	Red-Red-Yl. 1st AF Plate Load
93	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Tone Comp.
94	220KΩ	½		BTS-220K	Red-Red-Yl. 2nd AF Grid
95	2000Ω	½		BTS-2200	Red-Blk.-Red 2nd AF Cathode
96	15Ω	½		BW-½-15	Br.-Grn.-Blk. " " "
97	220KΩ	½		BTS-220K	Red-Red-Yl. 2nd AF Plate Load
98	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Phase Inverter Plate Load
99	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Phase Inverter Cathode
100	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Phase Inverter Grid
101	2000Ω	½		BTS-2200	Red-Blk.-Red Decoupling
102	220KΩ	½		BTS-220K	Red-Red-Yl. Output Grid
103	220KΩ	½		BTS-220K	Red-Red-Yl. " "
104	200Ω	2		BW-2-220	Red-Blk.-Br. Output Cathode
105	100Ω	½		BW-½-100	Br.-Blk.-Br. Feedback
106	2200Ω	10		AB-2250	Filter
107	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. Phono Tone Comp.
108	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Phono Shunt

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	AIRCASTLE PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
109	117V AC @ .8A	660V CT .102A DC	5.0V AC @ 2.0A	6.3V AC @ 3.2A	ZA-18.053	P-6013#	T-22R05	P-2953#

#Add series resistor to reduce plate voltage.



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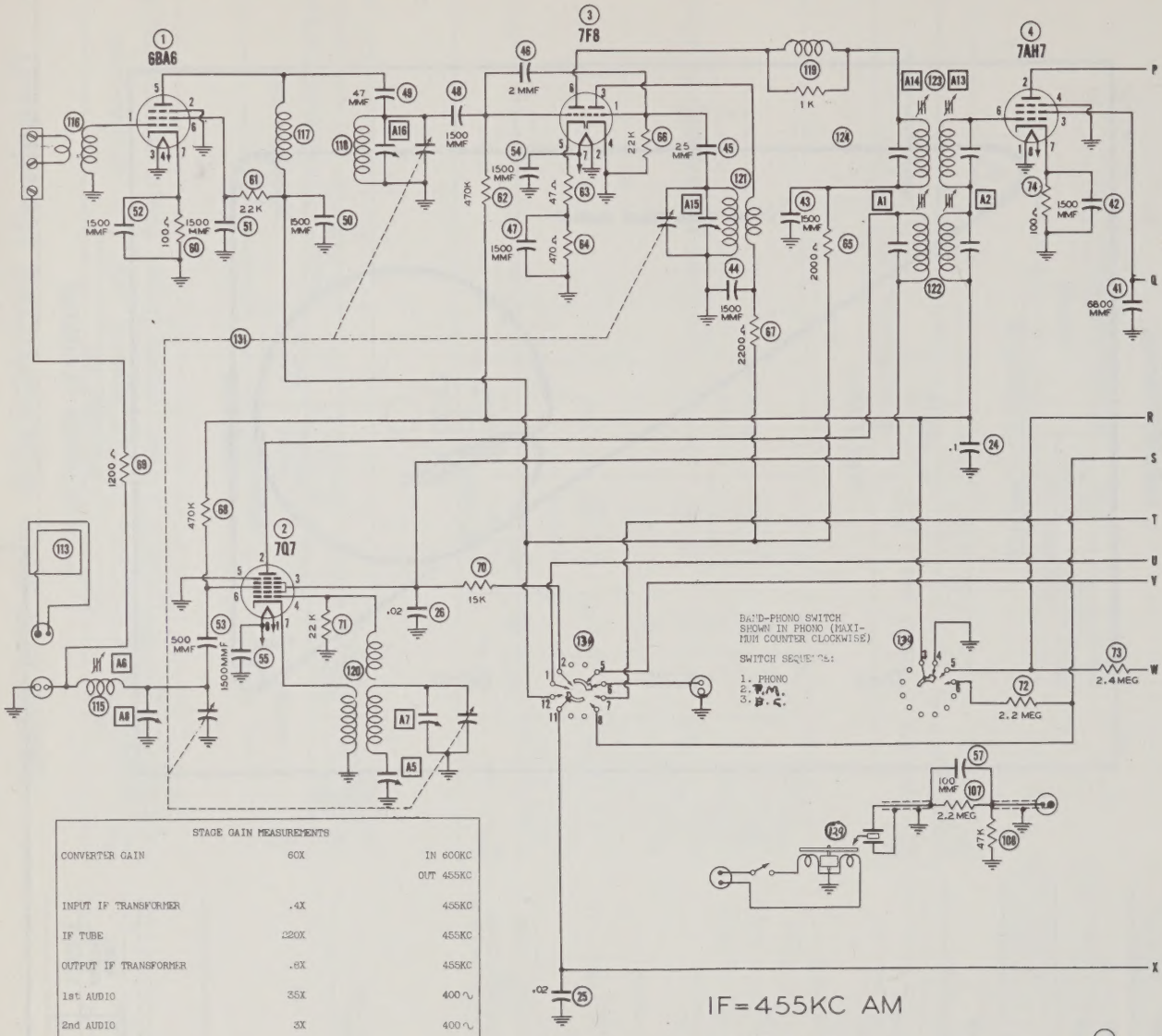
AIRCASTLE MODEL 7B PAGE 5



STAGE GAIN MEASUREMENTS

CONVERTER GAIN	60X	IN 600KC OUT 455KC
INPUT IF TRANSFORMER	.4X	455KC
IF TUBE	220X	455KC
OUTPUT IF TRANSFORMER	.6X	455KC
1st AUDIO	35X	400 ∿
2nd AUDIO	3X	400 ∿
PHASE INVERTER	.6X	400 ∿
OUTPUT	30X	400 ∿

VOLTAGE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	6BA6	0V.	0V.	0V.	6.3VAC	213VDC	108VDC	1.8VDC	-
	2	7Q7	0V.	85VDC	95VDC	-0.5VDC§	0V.	0V.	0V.	6.3VAC
‡	3	7F8	-5VDC§	0V.	155VDC	0V.	2.9VDC	200VDC	6.3VAC	0V.
	4	7AH7	0V.	238VDC	238VDC	0V.	0V.	0V.	1.3VDC	6.3VDC
‡	5	6SH7	0V.	0V.	1.3VDC	0V.	1.3VDC	130VDC	6.3VDC	160VDC
‡	6	7A6	0V.	2.6VDC	2.2VDC	-.2VDC	0V.	.6VDC	2.2VDC	6.3VAC
	7	6S4TGT	0V.	-.5VDC	0V.	-.3VDC	-.1VDC	105VDC	0V.	6.3VAC
	8	7F7	0V.	80VDC	163VDC	78VDC	0V.	73VDC	1VDC	6.3VAC
	9	7C5	0V.	330VDC	250VDC	0V.	0V.	0V.	15VDC	6.3VAC
	10	7C6	0V.	330VDC	250VDC	0V.	0V.	0V.	15VDC	6.3VAC
	11	5Y3GT	0V.	335VDC	0V.	330VAC	0V.	330VAC	0V.	335VDC

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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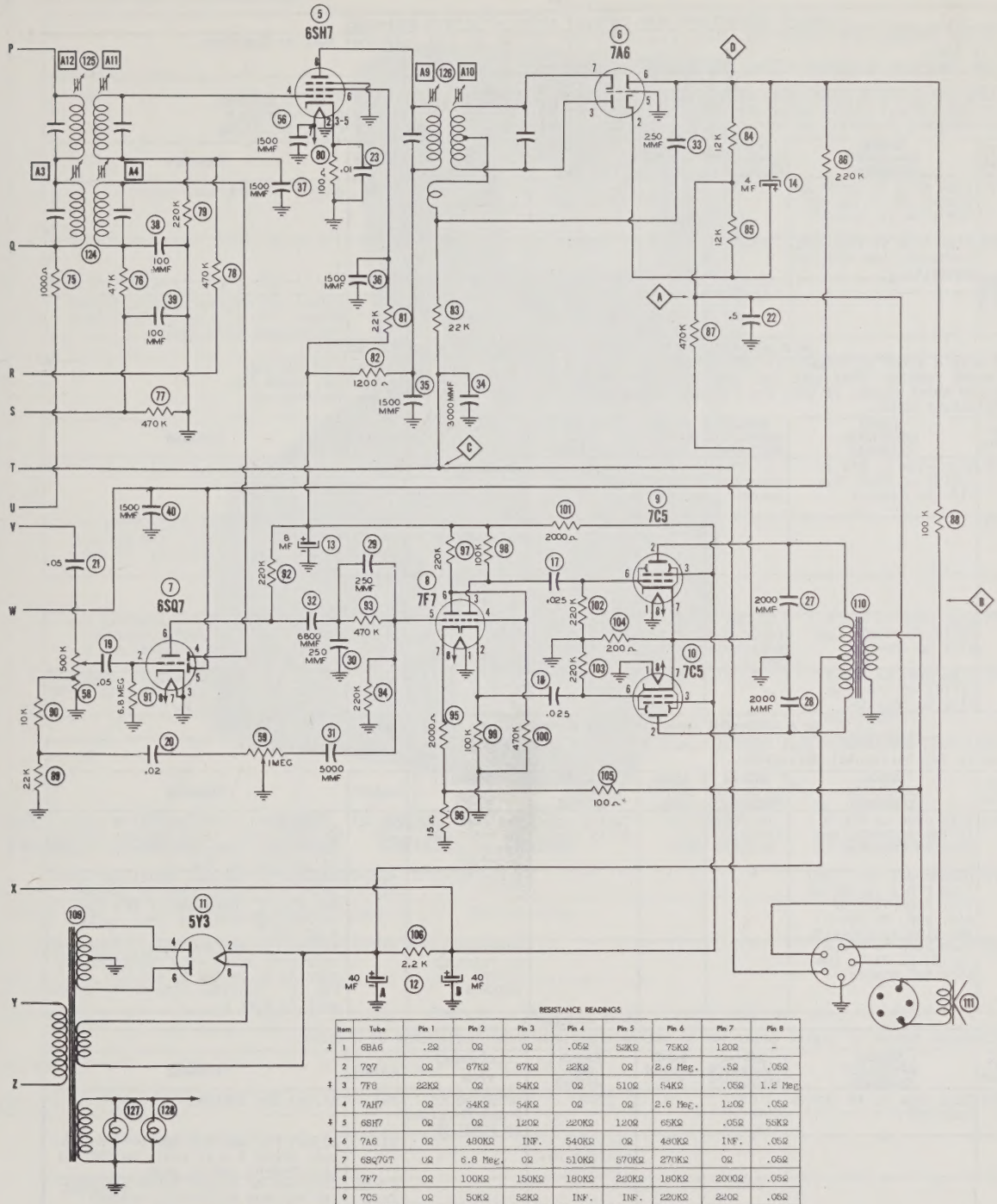

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡ 1	6BA6	.2Ω	0Ω	0Ω	.05Ω	52KΩ	75KΩ	120Ω	-
2	7Q7	0Ω	67KΩ	67KΩ	22KΩ	0Ω	2.6 Meg.	.5Ω	.05Ω
‡ 3	7F8	22KΩ	0Ω	54KΩ	0Ω	510Ω	54KΩ	.05Ω	1.2 Meg
4	7AH7	0Ω	54KΩ	54KΩ	0Ω	0Ω	2.6 Meg.	120Ω	.05Ω
‡ 5	6SH7	0Ω	0Ω	120Ω	220KΩ	120Ω	65KΩ	.05Ω	55KΩ
‡ 6	7A6	0Ω	480KΩ	INF.	540KΩ	0Ω	480KΩ	INF.	.05Ω
7	6SQ7GT	0Ω	6.8 Meg.	0Ω	510KΩ	570KΩ	270KΩ	0Ω	.05Ω
8	7F7	0Ω	100KΩ	150KΩ	180KΩ	220KΩ	180KΩ	200Ω	.05Ω
9	7C5	0Ω	50KΩ	52KΩ	INF.	INF.	220KΩ	220Ω	.05Ω
10	7C5	0Ω	50KΩ	52KΩ	INF.	INF.	220KΩ	220Ω	.05Ω
11	5Y3GT	INF.	50KΩ	INF.	130Ω	INF.	130Ω	INF.	50KΩ

‡TAKEN WITH VACUUM TUBE VOLTMETER.

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.
Use insulated alignment screwdriver for all adjustments.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to front AM stator of tuning cap. Low side to chassis.	455KC	AM (fully clock-wise)	Tuning cap. fully open.	Across voice coil.	A1,A2, A3,A4	Adjust for maximum output.
2	200MMFD	High side to ext. ant. terminal. Low side to chassis.	600KC	"	600KC	"	A5,A6	" " " "
3	200MMFD	"	1600KC	"	1600KC	"	A7	" " " "
4	200MMFD	"	"	"	Tune for maximum output.	"	A8	Adjust for maximum output. Repeat Steps 2, 3 and 4 until no further improvement can be made.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR, VTVM & OUTPUT METER

In step 6 after adjustment of A10 for zero deflection tune sig. gen. 200KC above 10.7MC and note meter reading. Then tune sig. gen. 200KC below 10.7MC and note the meter reading. These two should be about equal. If they are not then A9 should be readjusted until the two readings are approximately equal.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5	.01 MFD.	High side to Pin 4 (grid) of 6SH7. Low side to chassis.	10.7MC (Unmodulated)	FM (center position)	Tuning cap. fully open.	DC probe to Point (B). Common to Point (A).	A9	Adjust for maximum deflection.
6	.01 MFD.	"	"	"	"	DC probe to Point (D). Common to Point (A).	A10	Use a zero center scale VTVM if available and adjust for maximum output. Check linearity per pre-alignment notes.
						OUTPUT METER		
7	.01 MFD.	High side to Pin 6 (grid) of 7AH7. Low side to chassis.	10.7MC (400∿30% amplitude mod.)	FM (center position)	Tuning cap. fully open.	Across voice coil.	A11, A12	Connect 1000Ω carbon resistor across primary of ratio detector transformer (122). Adjust A11 & A12 for maximum output.
8	.01 MFD.	High side to Pin 8 (grid) of 7F8. Low side to chassis.	"	"	"	"	A13, A14	Adjust for maximum output. Remove 1000Ω resistor. Continue with FM-RF Alignment in Step 9.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use freq. modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5	.01 MFD	High side to Pin 6 (grid) of 7AH7. Low side to chassis.	10.7MC (Freq. Mod.)	FM	Tuning cap. fully open.	Vertical input to Point (D). Ground to Point (A).	A9,A11 A12	Disconnect 4 MFD cap. from point (D). Adjust A9, A11 & A12 for maximum amplitude, symmetry and coincidence of pattern per Fig. 1.
6	.01 MFD	Disconnect cap. (48) from Pin 8 (grid) of 7F8. High side of sig. gen. to Pin 8. Low side to chassis.	"	"	"		A13, A14	Adjust for maximum amplitude, symmetry and coincidence of pattern per Fig. 1. Reconnect 4 MFD cap. to Point (D) and cap. (48) to pin 8 of 7F8.
7	.01 MFD	High side to Pin 6 (grid) of 7AH7. Low side to chassis.	"	"	"	Vertical input to Point (C). Ground to chassis.	A10	Adjust for maximum straightness of crossover lines with crossover occurring at center of pattern per Fig. 2. Continue with FM-RF Alignment in Step 9.

FM RF ALIGNMENT

Attenuate output of signal generator to maintain maximum meter deflection of 2 volts.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9	2- 150Ω carbon res.	Each side to FM dipole terminal.	108MC (Unmodulated)	FM	108MC	DC probe to Point (B). Common to Point (A).	A15	Adjust for maximum deflection.
10	"	"	"	"	Tune for maximum deflection.	"	A16	Adjust for maximum deflection. Repeat Steps 9 & 10 until no further improvement can be made.
11	"	"	90MC	"	"	"	FM-RF Coil (115)	Compress or expand turns slightly for maximum deflection. Repeat Steps 9, 10 & 11 until no further improvement can be made.

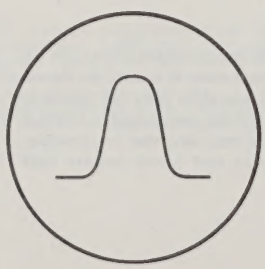


FIG. 1

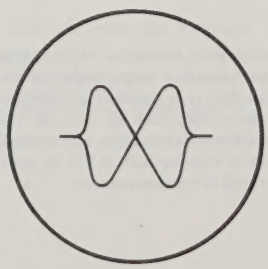
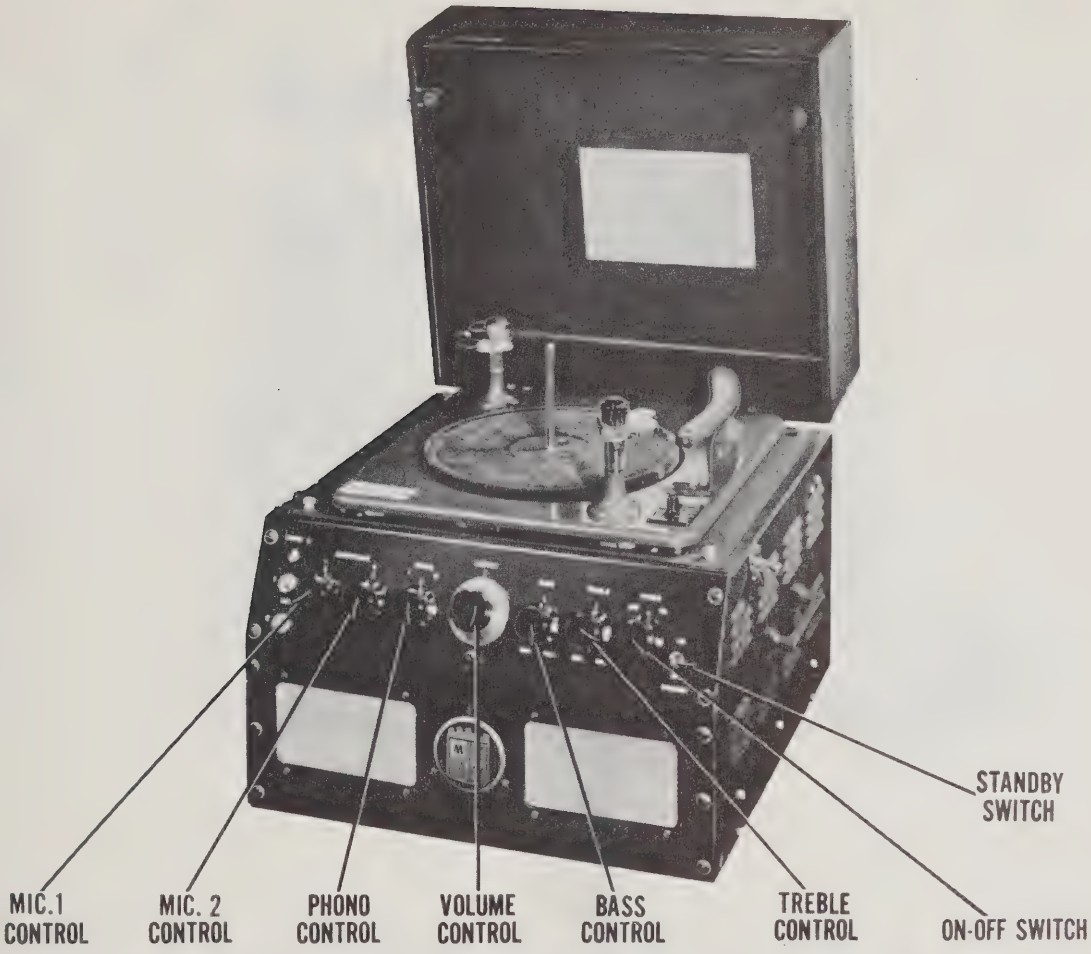


FIG. 2

AIRLINE MODELS 74GSG-8810A, 74GSG-8820A

AIRLINE MODELS 74GSG-8810A, 74GSG-8820A



AIRLINE MODEL 74GSG-8820A

TRADE NAME	Airline. Models 74GSG-8810A, 74GSG-8820A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	AC or Battery Operated 3 Channel Audio Amplifier
TUBES (TEN)	Types, 6SQ7 Mic. 1 Amp., 6SQ7 Mic. 2 Amp., 6SQ7 Mixer, 6SQ7 AF Amp., 6F6G Driver, (2) 807 Power Output, (3) 6X5GT Rectifier.
POWER SUPPLY	105-125 Volts AC or 6 Volts Storage Battery
RATING	1.1 Amp. @ 117 Volts AC or 25 Amp. @ 6 Volts DC

AIRLINE MODELS 74GSG-8810A, 74GSG-8820A

HOWARD W. SAMS & CO., INC. Indianapolis Indiana

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DATE 12/48-#4822-2 SET #52-FOLDER #2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Mic. #1 Amp.	6SQ7	6SQ7	8Q	
2	Mic. #2 Amp.	6SQ7	6SQ7	8Q	
3	Mixer	6SQ7	6SQ7	8Q	
4	AF Amp.	6SQ7	6SQ7	8Q	
5	Driver	6F6G	6F6G	7S	
6	Power Output	807	807		
7	" "	807	807		
8	Rectifier	6X5GT	6X5GT	6S	
9	"	6X5GT	6X5GT	6S	
10	"	6X5GT	6X5GT	6S	

CAPACITORS

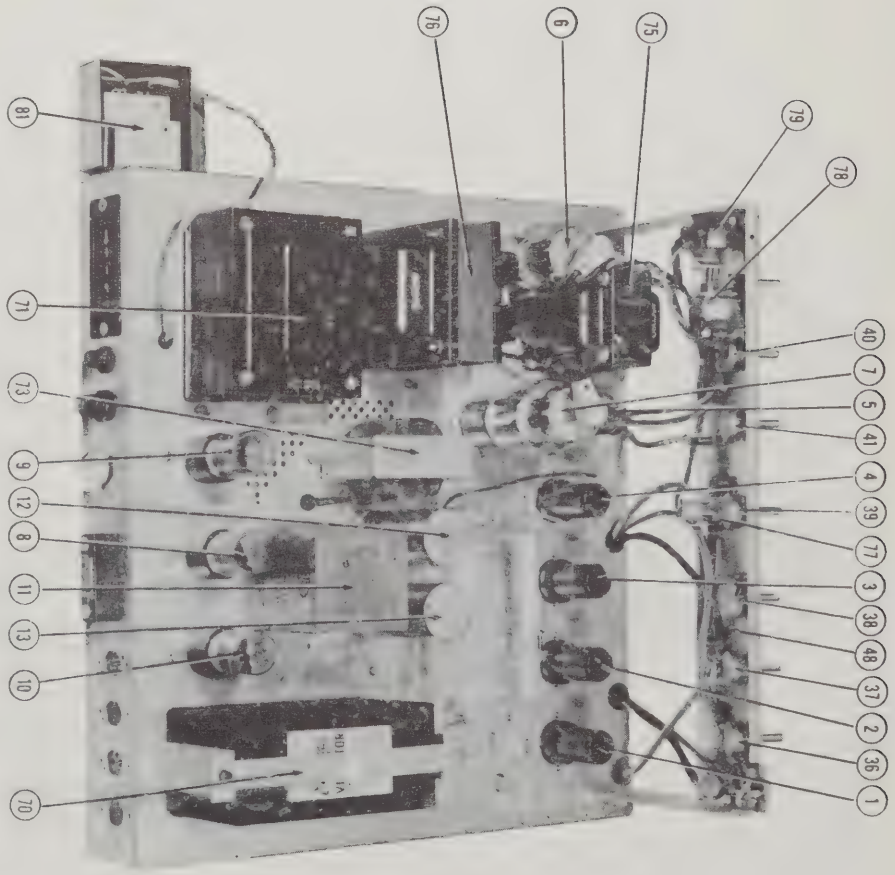
Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
11A	8	600	45B111					Filter
B	8	600						"
12A	10	450	285-5055	PRVC-450/10-10	EZ5112	DI-2x8-450	PLS88	" -Yellow
B	10	450						" "
C	30	450		PRS450/30	BR3045	M-30-450	UT-30	" Red
13A	10	450	285-5055	PRVC-450/10-10	EZ5112	DI-2x8-450	PLS-88	" Yellow
B	30	450		PRS450/30	BR3045	M-30-450	UT-30	Decoupling-Red
C	10	450						" Yellow
14	25	50	45-096	PRS50/25	BR255	M-25-50	TA-525	Driver Cathode Byp.
15	25	50	45-096	PRS50/25	BR255	M-25-50	TA-525	Audio Cathode Byp.
16	25	50	45-096	PRS50/25	BR255	M-25-50	TA-525	" " "
17	25	50	45-096	PRS50/25	BR255	M-25-50	TA-525	Mic. Amp. Cath. Byp.
18	25	50	45-096	PRS50/25	BR255	M-25-50	TA-525	" " " "
19	4	600	46A137	609-4	T-6040	XLXPL-6-4	OP1305	Phono Motor Bypass
20	.5	400	46AT504J	484-.5	GT4P5	ST-4-5	68P23	Hash Filter
21	.5	200	46AT504J	484-.5	GT2P5	ST-2-5	68P25	" "
22	.25	300	263-2543-100	484-.25	GT4P25	ST-4-25	68P22	" "
23	.5	200	46AT504J	484-.5	GT2P5	ST-2-5	68P25	" "
24A	.25	600	246-5046	684-.25	GT6P25	ST-6-25	68P37	Buffer
B	.25	600		684-.25	GT6P25	ST-6-25	68P37	"
25	.006	600	243-6026-100	684-006	GT6D6	ST-6-006	TC-26	Tone Compensation
26	.002	1600	263-2028-2	1684-002	GT16D2	ST-16-002	TR-22	Output Plate Bypass
27	.002	1600	263-2028-2	1684-002	GT16D2	ST-16-002	TR-22	" " "
28	.01	400	263-1034-5	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling
29	.002	600	263-2026-1	684-002	GT6D2	ST-6-002	TC-22	Tone Compensation
30	.01	400	263-1034-5	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling
31	.1	600	263-1044-3	684-.1	GT6P1	ST-6-1	TC-1	" "
32	.1	600	263-1044-3	684-.1	GT6P1	ST-6-1	TC-1	" "
33	270	500	CM20A271K	1468-00025	5W5T25	M0.5-325	1FM-325	Tone Compensation
34	270	500	CM20A271K	1468-00025	5W5T25	M0.5-325	1FM-325	" "
35	270	500	CM20A271K	1468-00025	5W5T25	M0.5-325	1FM-325	" "

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
36A	1 Meg.	½	25B576	D13-137	M-63-Z	Mike 1 Control
B	Shaft		Not Req.	A	Not Req.	Attach to 36A per instructions
37A	1 Meg.	½	25B576	D13-137	M-63-Z	Mike 2 Control
B	Shaft		Not Req.	A	Not Req.	Attach to 37A per instructions
38A	1 Meg.	½	25B592	DVC-539X		Phono Control tapped @ 500KΩ
B	Shaft		Not Req.	A		Attach to 38A per instructions
39A	500KΩ	½	25B578	D13-133	M-60-Z	Master Gain Control
B	Shaft		Not Req.	A	Not Req.	Attach to 39A per instructions
40A	1 Meg.	½	25B575	D11-137	M-61-S	Treble Control
B	Shaft		Not Req.	A	Not Req.	Attach to 40A per instructions
41A	500KΩ	½	25B578	D13-133	M-60-Z	Bass Control
B	Shaft		Not Req.	A	Not Req.	Attach to 41A per instructions

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIRLINE PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
42	3.3 Meg.	½	111-33512	BTS-3.3 Meg.	Or.-Or.-Grn. 1st Mic. Amp. Grid
43	3.3 Meg.	½	111-33512	BTS-3.3 Meg.	Or.-Or.-Grn. 2nd Mic. Amp. Grid
44	330Ω	½	111-33211	BTS-3300	Or.-Or.-Red 1st Mic. Amp. Cathode
45	330Ω	½	111-33211	BTS-3300	Or.-Or.-Red 2nd Mic. Amp. Cathode
46	150KΩ	½	111-15411	BTS-150K	Br.-Grn.-Yl. 1st Mic. Amp. Plate Load
47	150KΩ	½	111-15411	BTS-150K	Br.-Grn.-Yl. 2nd Mic. Amp. Plate Load
48	220KΩ	½	111-22411	BTS-220K	Red-Red-Yl. Isolation
49	100KΩ	½	111-10411	BTS-100K	Br.-Blk.-Yl. "
50	100KΩ	½	111-10411	BTS-100K	Br.-Blk.-Yl. "
51	330Ω	½	111-33211	BTS-3300	Or.-Or.-Red Mixer Cathode
52	100KΩ	½	111-10411	BTS-100K	Br.-Blk.-Yl. Mixer Plate Load
53	56KΩ	½		BTS-56K	Orn.-Blue-Or. Decoupling
54	22KΩ	½		BTS-22K	Red-Red-Or. "
55	100KΩ	½	111-10411	BTS-100K	Br.-Blk.-Yl. Tone Compensation
56	220KΩ	½	111-22411	BTS-220K	Red-Red-Yl. " "
57	150KΩ	½	111-15411	BTS-150K	Br.-Grn.-Yl. " "
58	330Ω	½	111-33211	BTS-3300	Or.-Or.-Red 1st AF Cathode
59	100KΩ	½	111-10411	BTS-100K	Br.-Blk.-Yl. 1st AF Plate Load
60	4700Ω	1	111-47231	BTA-4700	Yl.-Vi.-Red Decoupling
61	470KΩ	½	111-47412	BTS-470K	Yl.-Vi.-Yl. Driver Grid
62	680Ω	1	111-68131	BTA-680	Blue-Gray-Br. Driver Cathode
63	47Ω	1	111-47031	BW-1-47	Yl.-Vi.-Blk. Parasitic Suppressor
64	47Ω	1	111-47031	BW-1-47	Yl.-Vi.-Blk. "
65	1000Ω	5	151-10251	AB-1000	Filter
66	20KΩ	10	151-20361	AB-20K	Bleeder
67	50KΩ	20	151-50371	DG-50K	"
68	47Ω	5	151-47051	AB-50	Series Phono Motor
69	220Ω	1	111-22131	BW-1-220	Red-Red-Br. Hash Suppressor

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA AIRLINE PART No.	REPLACEMENT DATA RADIART PART No.	INSTALLATION NOTES
70	Interrupter	6.3 VDC	60 ∿	27A141		

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING *SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA AIRLINE PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDARSON PART No.	REPLACEMENT DATA MERIT PART No.
71	117V AC @ 1.1A or 6.3V DC @ 9.6A	700V CT @ .105ADC 520VCT @ .048A DC	6.7V CT @ 5.0A		52C136			

*Current drain taken at 117V AC.

FILTER CHOKE

ITEM NO.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (@ CURRENT 1000 ∿)	REPLACEMENT DATA AIRLINE PART NO.	REPLACEMENT DATA STANCOR PART NO.	REPLACEMENT DATA THORDARSON PART NO.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
72	.053A#	330Ω	8.5 Henries	56B077	C-1355†	T20C52†	C-2981†	†Drill new mounting holes.
73	.137A#	47Ω	4 Henries	56B066	C-2304†	T20C54†	C-2974†	

#Current drain taken on DC.

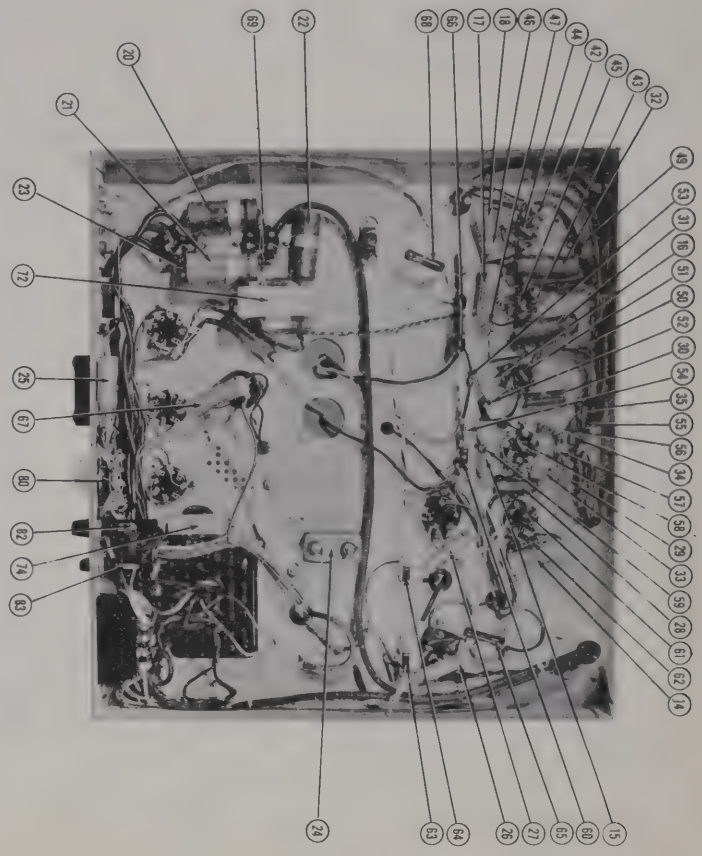
FILAMENT CHOKE

ITEM NO.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (@ CURRENT 1000 ∿)	REPLACEMENT DATA AIRLINE PART NO.	REPLACEMENT DATA STANCOR PART NO.	REPLACEMENT DATA THORDARSON PART NO.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
74	5.0 Amp.	.04Ω	840 Micro-henries	56B078				

DATE 12/45-#48822-2

BSCT #52-FOLDER #2

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	RATING TURNS RATIO PRI. to SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA AIRLINE PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
75	1½ to 1	350Ω	560ΩCT	52C090	A-4405†		A-3125	†Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA AIRLINE PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
76	4650Ω CT	500Ω 8Ω 4Ω 2.7Ω 2Ω	117Ω CT	12.4Ω .21Ω .14Ω .09Ω .06Ω	55C089	A-3600†		A-3130†	†Drill new mounting holes.

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA AIRLINE PART No.	REPLACEMENT DATA	INSTALLATION NOTES
77	Bayonet	6-8	0.25	Blue	422-44		Type #44

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
78	Switch	60A286	Power
79	"	60A286	Standby
80	"	60B275	Speaker Selector
81	"	531-10	Interlock
82	Fuse	39A305	30 Amp. (4AG)
83	"	541-2	3 Amp. (3AG)

DATE 12/49-#4822-2 SET #52-FOLDER #2

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6SQ7	0V.	0V.	1.2VDC	1.2VDC	1.2VDC	125VDC	3.3VAC	3.3VAC	-
2	6SQ7	0V.	0V.	1.2VDC	1.2VDC	1.2VDC	125VDC	3.3VAC	3.3VAC	-
3	6SQ7	0V.	0V.	1.6VDC	1.6VDC	1.6VDC	17 5VDC	3.3VAC	3.3VAC	-
4	6SQ7	0V.	0V.	1.8VDC	1.8VDC	1.8VDC	200VDC	3.3VAC	3.3VAC	-
5	6F6G	0V.	3.3VAC	250VDC	250VDC	0V.	0V.	3.3VAC	19VDC	-
6	807	3.3VAC	280VDC	-22.5VDC	0V.	3.3VAC	-	-	-	410VDC
7	807	3.3VAC	280VDC	-22.5VDC	0V.	3.3VAC	-	-	-	410VDC
8	6X5GT	0V.	3.3VAC	350VAC	0V.	350VAC	0V.	3.3VAC	390VDC	-
9	6X5GT	0V.	3.3VAC	250VAC	0V.	250VAC	0V.	3.3VAC	350VDC	-
10	6X5GT	0V.	3.3VAC	350VAC	0V.	350VAC	0V.	3.3VAC	390VDC	-

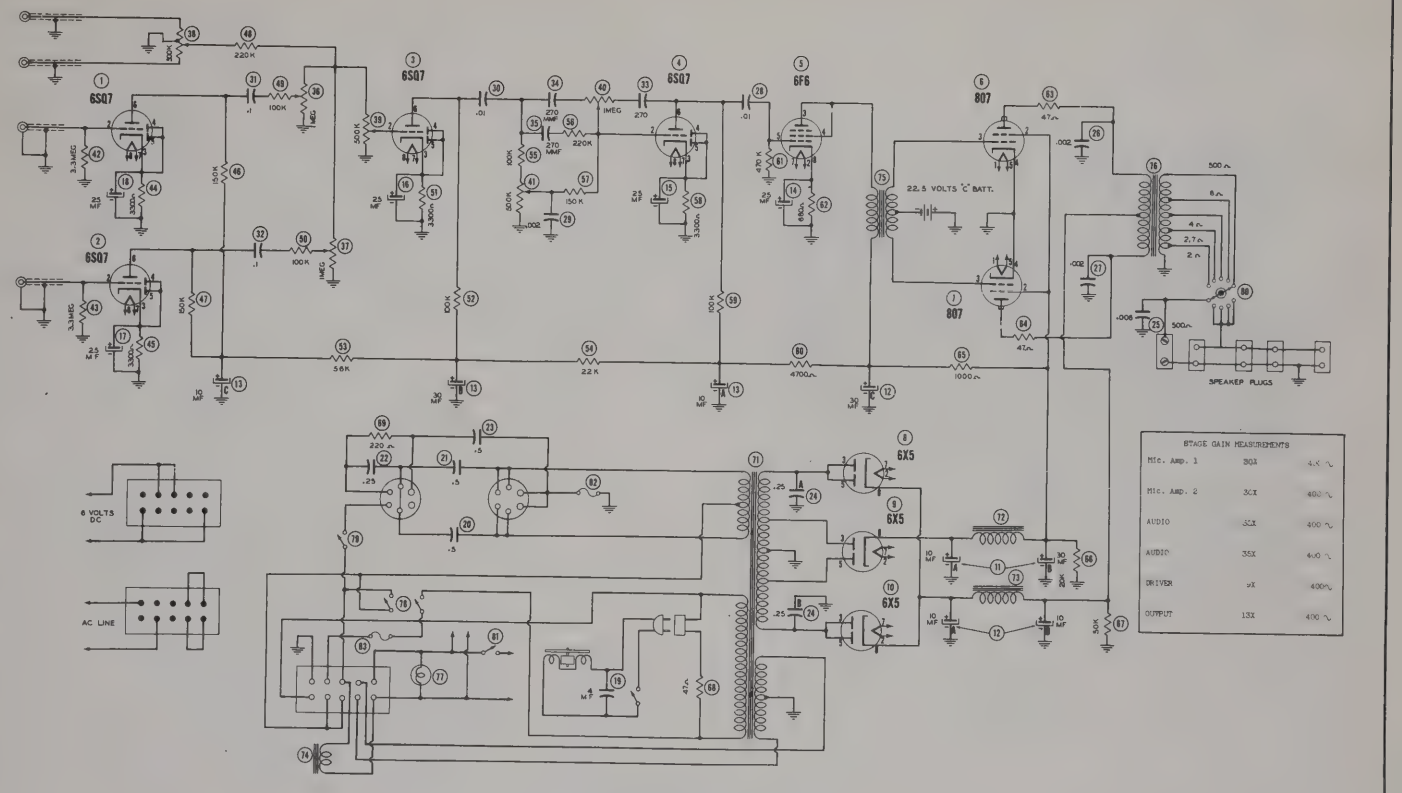
**NO READING TAKEN.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6SQ7	0Ω	3.3 Meg.	3.3MΩ	3.3MΩ	3.3MΩ	250KΩ	.05Ω	.05Ω	-
2	6SQ7	0Ω	3.3 Meg.	3.3MΩ	3.3MΩ	3.3MΩ	250KΩ	.05Ω	.05Ω	-
3	6SQ7	0Ω	0Ω	3.3MΩ	3.3MΩ	3.3MΩ	140KΩ	.05Ω	.05Ω	-
4	6SQ7	0Ω	140KΩ	3.3KΩ	3.3KΩ	3.3KΩ	125KΩ	.05Ω	.05Ω	-
5	6F6G	0Ω	.05Ω	20KΩ	20KΩ	470KΩ	INF.	.05Ω	65Ω	-
6	807	.05Ω	20KΩ	-	0Ω	.05Ω	-	-	-	50KΩ
7	807	.05Ω	20KΩ	-	0Ω	.05Ω	-	-	-	50KΩ
8	6X5GT	0Ω	.05Ω	42Ω	INF.	42Ω	INF.	.05Ω	50KΩ	-
9	6X5GT	0Ω	.05Ω	30Ω	INF.	29Ω	INF.	.05Ω	20KΩ	-
10	6X5GT	0Ω	.05Ω	40Ω	INF.	40Ω	INF.	.05Ω	50KΩ	-

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1 - DC Voltage measurements are at 20,000 ohms per volt;
AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.



THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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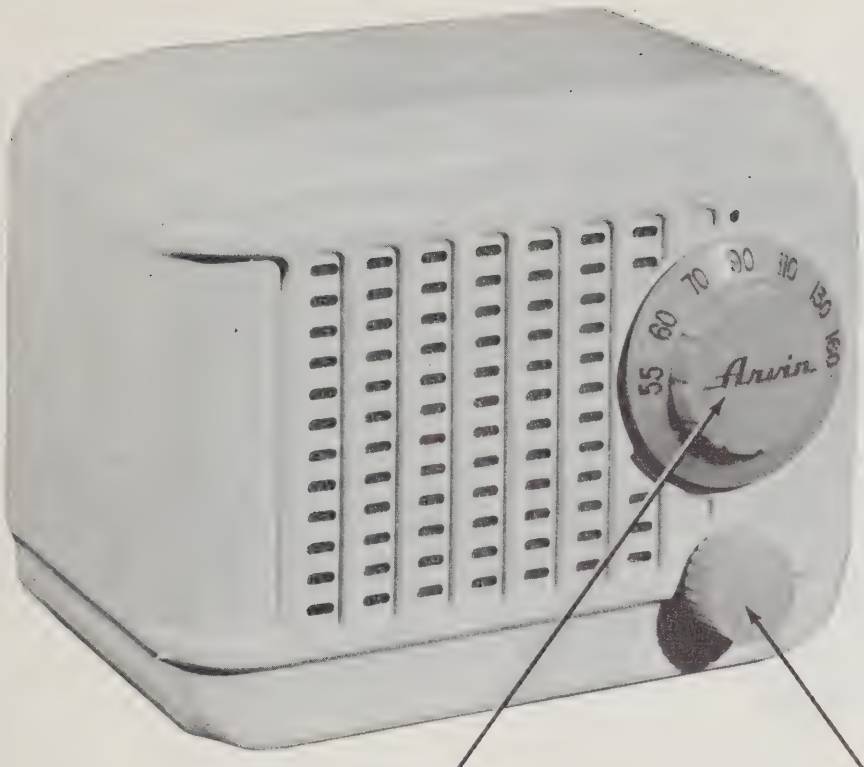
4822-2

ARVIN MODELS
242T, 243T (Ch. RE-251)



ARVIN MODELS
242T, 243T (Ch. RE-251)

ARVIN MODEL 242T

TRADE NAME	Arvin, Models 242T, 243T (Ch. RE-251)
MANUFACTURER	Noblitt Sparks Industries, Columbus, Ind.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types, 12SA7 Converter, 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE—BROADCAST	540-1600KC RATING .23 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD	High side to Pin 8 (grid) of 12SA7. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2	50 MMFD	High side to junction of ant. hank and ant. coil. Low side to B-.	1400KC	Tune for maximum output.	"	A3	Rock tuning cap. and adjust for maximum output.
3	50 MMFD	"	600KC	"	"		Bend plates of rear rotor of tuning cap. for maximum output. Repeat Steps 2 and 3 until no further improvement can be made.

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PARTS LIST AND DESCRIPTIONS

ARVIN MODELS
242T, 243T

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		ARVIN PART No.	STANDARD REPLACEMENT		
1	Converter	12SA7	12SA7	8R	
2	Det.-AVC-AF	12SQ7	12SQ7	8Q	
3	Power Output	50L6GT	50L6GT	7AC	
4	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	ARVIN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	
5A	40	150	A19176	PRSA-40302	EDL4215C	DSB-303	TA-305	Filter-Red
B	20	150						" -Blue
C	20	250						Cathode Bypass-Green
6	.05	400	C20068-503	484-05	GT4S5	ST-4-05	TC-15	Line Filter
7	.05	400	C20068-503	484-05	GT4S5	ST-4-05	72P1	Line Isolation
8	.01	400	C20068-103	484-01	GT4S1	ST-4-01	TC-11	Output Plate Bypass
9	.002	600	C20069-202	684-002	GT6D2	ST-6-002	TC-22	Audio Coupling
10	.002	600	C20069-202	684-002	GT6D2	ST-6-002	TC-22	" "
11	.05	200	C20067-503	484-05	GT2S5	ST-4-05	TC-15	AVC Filter
12	100	500	C20065-101	1468-0001	5W5T1	MO.5-31	1FM-31	AF Plate Bypass
13	100	500	C20065-101	1468-0001	5W5T1	MO.5-31	1FM-31	Diode RF Filter
14	50	500	C20065-500	1468-00005	5W5Q5	MO.5-45	1FM-45	Osc. Grid Cap.
15	14	500		1468-00001	5W5Q1	MO.5-41	MS-41	Ant. Coupling

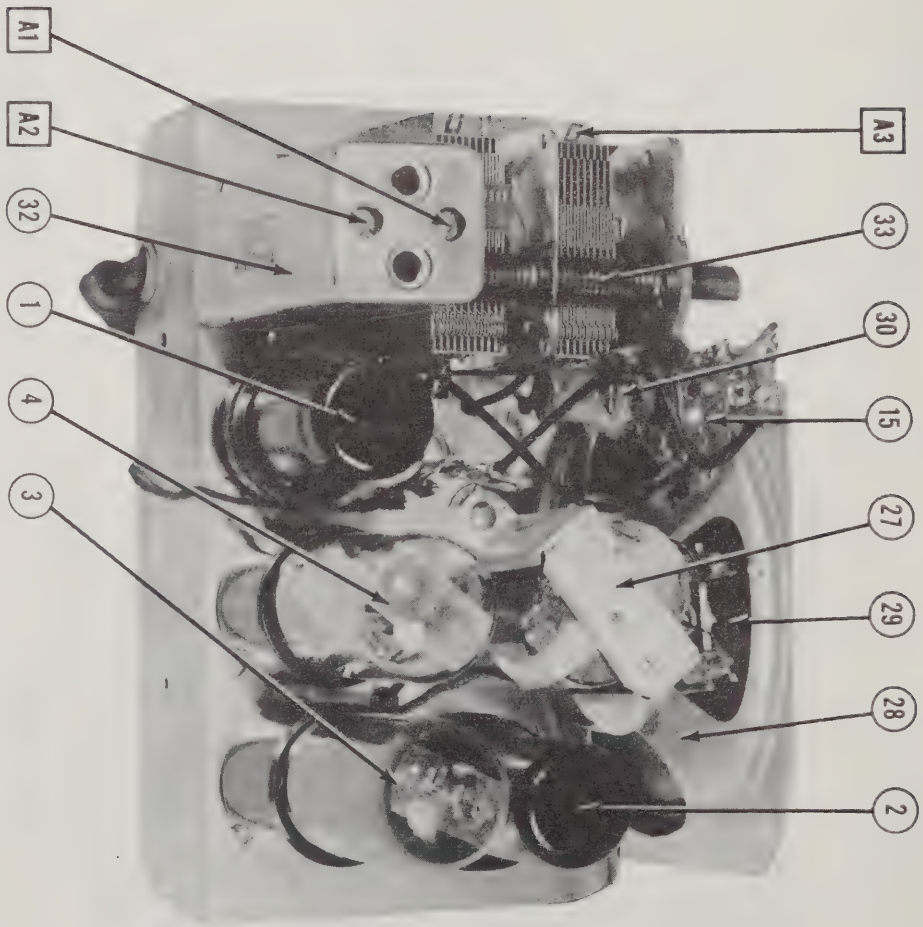
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	ARVIN PART No.	IRC PART No.	CLAROSTAT PART No.	
16A	2 Meg.	½	C21630	D13-139	AM-66-Z	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 16A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ARVIN PART No.	IRC PART No.	
17	22KΩ	½	C20060-223	BTS-22K	Red-Red-Or. Osc. Grid
18	4.7 Meg.	½	C20060-475	BTS-4.7 Meg.	Yl.-Vi.-Grn. AVC Network
19	15 Meg.	½	C20060-156	BTS-15 Meg.	Br.-Grn.-Blue AF Grid
20	470KΩ	½	C20060-474	BTS-470K	Yl.-Vi.-Yl. AF Plate
21	1 Meg.	½	C20060-105	BTS-1 Meg.	Br.-Blk.-Grn. Output Grid
22	150Ω	½	C20060-151	BW-½-150	Br.-Grn.-Br. Output Cathode
23	2200Ω	1	C20070-222	BTA-2200	Red-Red-Red Filter
24	15Ω	½	C20060-150	BW-½-15	Br.-Grn.-Blk. Surge Limiter
25	330KΩ	½	C20060-334	BTS-330K	Or.-Or.-Yl. Line Isolation
26	47Ω	1	A-19177	BW-1-47	Yl.-Vi.-Blk. Line Dropping

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ARVIN	STANCOR	THORDAR'N	MERIT	
	PRI.	SEC.	PRI.	SEC.	PART No.	PART No.	PART No.	PART No.	
27	2200Ω	4.0Ω	162Ω	.4Ω	AC-18258-1				

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ARVIN PART No.	JENSEN PART No.	QUAM PART No.	
28	FIELD RES. PM	VC IMP. 4.0Ω	C21626		4A07	
29	CONE DIA. 4"	VC DIA. 9/16"				

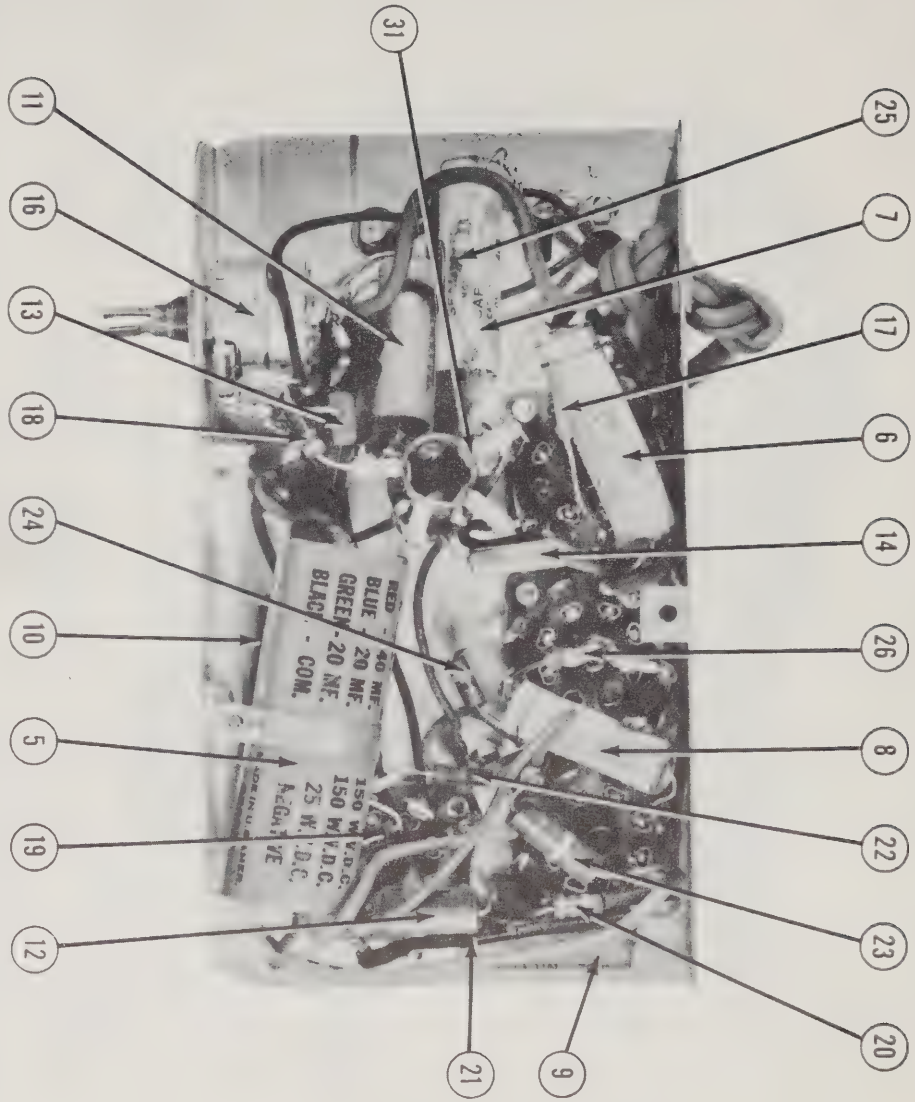
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ARVIN PART No.	MEISSNER PART No.	
30	Ant. Coil	32Ω	3Ω	AC18255-1	14-1026	
31	Osc. Coil	.5Ω	5.5Ω	AC18256-1	14-1060	
32	IF Trans.	16Ω	17Ω	AC18257-1		

MISCELLANEOUS

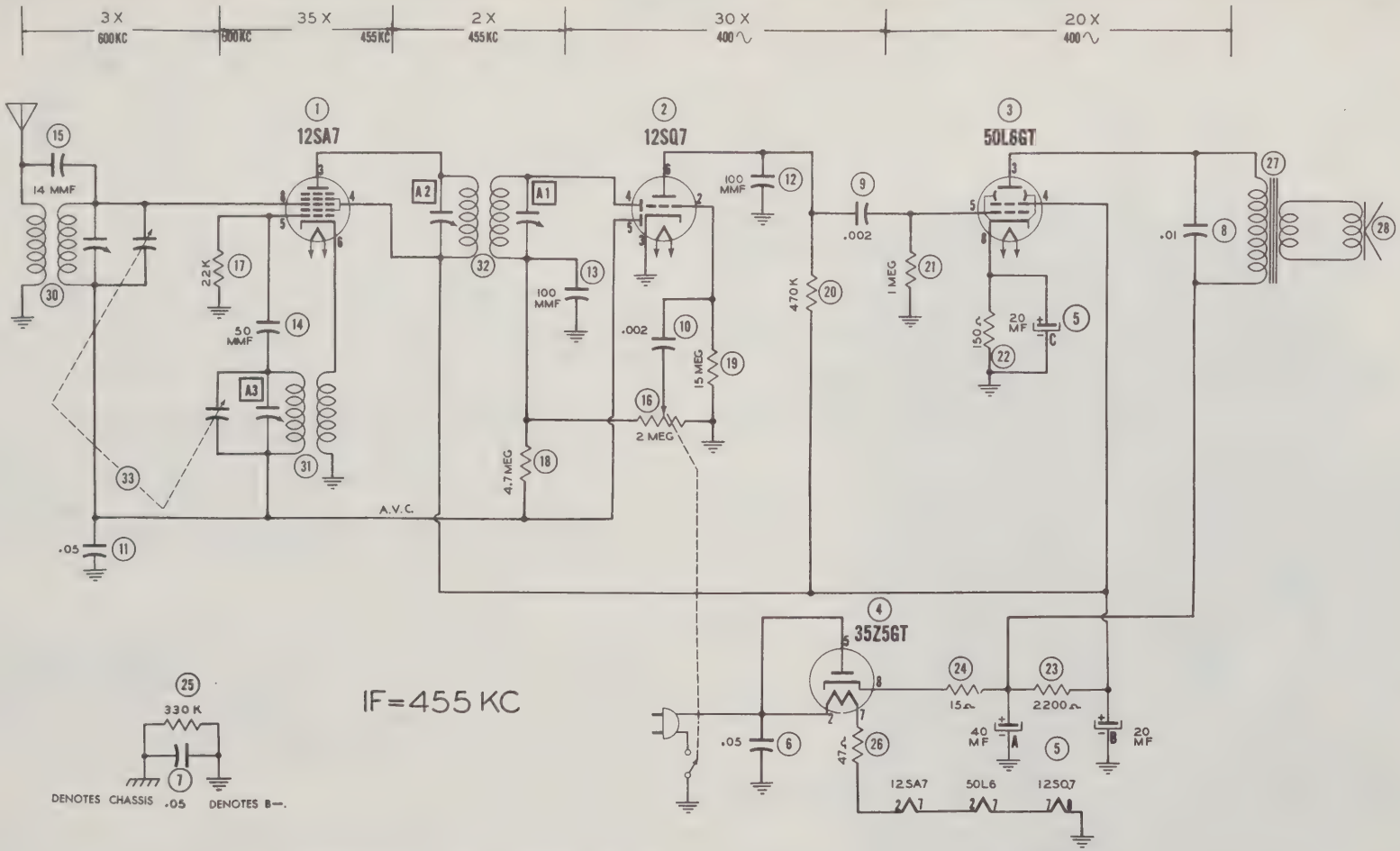
ITEM No.	PART NAME	ARVIN PART No.	NOTES
33	2 Gang Var. Cap	C22047	(14-377MMF, 31-195MMF)
	Cabinet	E22029-2	Model 242T Ivory
	"	E22029-3	" " Yellow
	"	E22029-5	Model 243T Green
	"	E22029-6	" 243T Red

CHASSIS—BOTTOM VIEW



ARVIN MODELS 242T, 243T

ARVIN MODELS 242T, 243T



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0V.	75VAC	100VDC	100VDC	-7.9VDC§	0V.	60VAC	-.4VDC
2	12SQ7	0V.	-.5VDC	0V.	-.3VDC	-.4VDC	50VDC	12VAC	0V.
3	50L6GT	0V.	60VAC	127VDC	100VDC	0V.	0V.	12VAC	6.9VDC
4	35Z5GT	0V.	117VAC	110VAC	75VAC	117VAC	133VDC	85VAC	133VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	330KΩ	80Ω	45KΩ	45KΩ	22KΩ	.5Ω	65Ω	6.7 Meg.
2	12SQ7	330KΩ	15 Meg.	0Ω	2 Meg.	6.7 Meg.	520KΩ	12Ω	0Ω
3	50L6GT	INF.	65Ω	45KΩ	45KΩ	1 Meg.	INF.	12Ω	150Ω
4	35Z5GT	INF.	160Ω	150Ω	80Ω	160Ω	45KΩ	125Ω	45KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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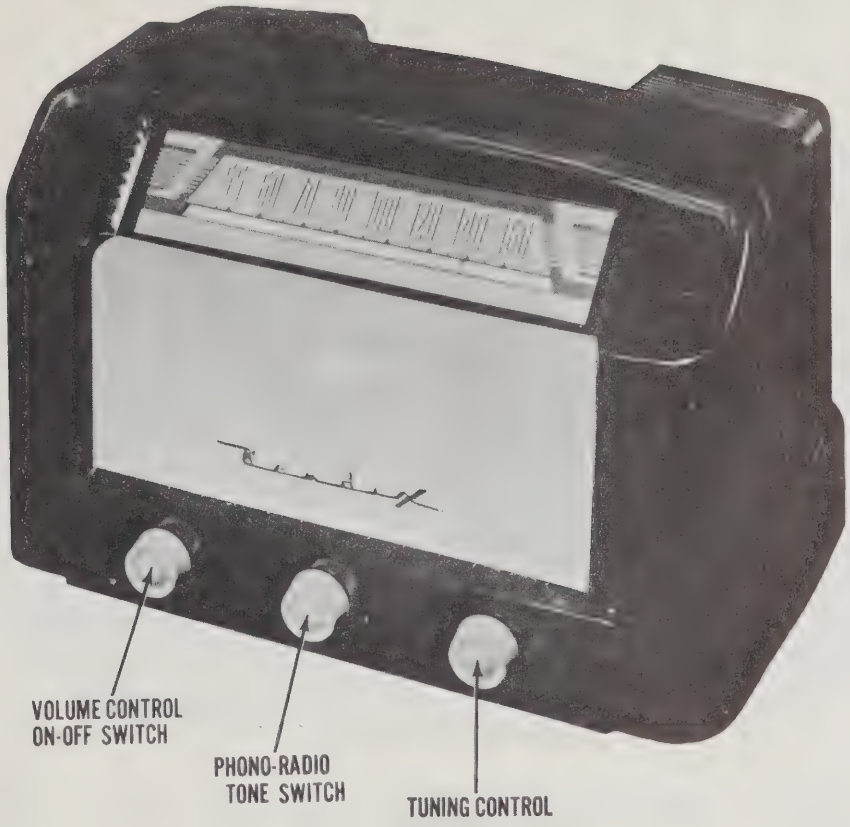
4822-3

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

BENDIX MODEL
65P4



BENDIX MODEL
65P4

BENDIX MODEL 65P4

TRADE NAME	Bendix, Model 65P4
MANUFACTURER	Bendix Radio, Div. of Bendix Aviation Corp., Baltimore, Md.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 14A7 RF Amp., 14Q7 Converter, 14A7 IF Amp., 14B6 Det.-AVC-AF, 35A5 Power Output, 35Y4 Rectifier.
POWER SUPPLY	105-120 Volts AC-DC
TUNING RANGE--BROADCAST	540-1620KC RATING .23 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS--READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

There are four calibration marks on lower edge of dial backplate frame. These are in order from left to right: low freq. end limit, 580KC, 965KC and 1475KC. To set dial pointer turn tuning cap. fully closed and set pointer to low freq. end limit.

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to ext. ant. lead. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2	50 MMFD	"	1475KC	1475KC calibration mark.	"	A5	Adjust for maximum output.
3	50 MMFD	"	"	Tune for maximum output.	"	A6,A7	Adjust for maximum output. Check calibration at 965KC & 580KC. If pointer does not fall within width of calibration marks bend tuning cap. rotor plates to correct calibration. If rotor plates are bent then Steps 2 & 3 must be repeated until no further improvement can be made.

HOWARD W. SAMS & CO., INC. Indianapolis . Indiana

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DATE 12/48-#4822-4 SET #52-FOLDER #4

PARTS LIST AND DESCRIPTIONS

BENDIX MODEL 65P4

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	14A7	14A7	8V	
2	Converter	14S7	14S7	8AL	
3	IF Amp.	14A7	14A7	8V	
4	Det.-AVC-AF	14B6	14B6	8W	
5	Power Output	35A5	35A5	6AA	
6	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	CE3A00	AF844D*	UP64215	DY-604020-150	D5180‡	▲ Filter
B	60	150		PRS150/40				■ "
C	20	150						"
8	.05	400	CP4T40	484-05	GT4S5	ST-4-05	TC-15	Line Filter
9	.1	400	CP4T51	484-.1	GT4P1	ST-4-1	72P2	Line Isolation
10	.02	400	CP4T34	484-02	GT4S2	ST-4-02	TC-12	Output Plate Bypass
11	.01	400	CP4T31	484-.01	GT4S1	ST-4-01	TC-11	Audio Coupling
12	.006	400	CP4T20	484-006	GT6D6	ST-6-006	TC-26	" "
13	.04	400	CP4T38	484-05	GT6S4	ST-6-04	TC-14	Tone Compensation
14	.1	400	CP4T51	484-.1	GT4P1	ST-4-1	TC-1	Phono Isolation
15	.05	400	CP4T40	484-05	GT4S5	ST-4-05	TC-15	IF Cathode Bypass
16	.05	400	CP4T40	484-05	GT4S5	ST-4-05	TC-15	AVC Filter
17	.004	600	CP6T16	684-004	GT6D4	ST-6-004	TC-24	Ext. Ant. Isolation
18	330	500	CC8F40	1468-00035	5W5T3	MO.5-33	1FM-33	Feedback
19	220	500	CM5A30	1468-00025	5W5T25	MO.5-325	1FM-325	AF Plate Bypass
20	47	500	CM5A14	1469-00005	5R5Q5	MO8.5-45	MS-45	Osc. Grid Cap.-Silver
21	47	500	CM5A14	1469-00005	5R5Q5	MO8.5-45	MS-45	Fixed Trimmer "

‡Omit 200 MFD section.
*Parallel sections to obtain desired capacity.

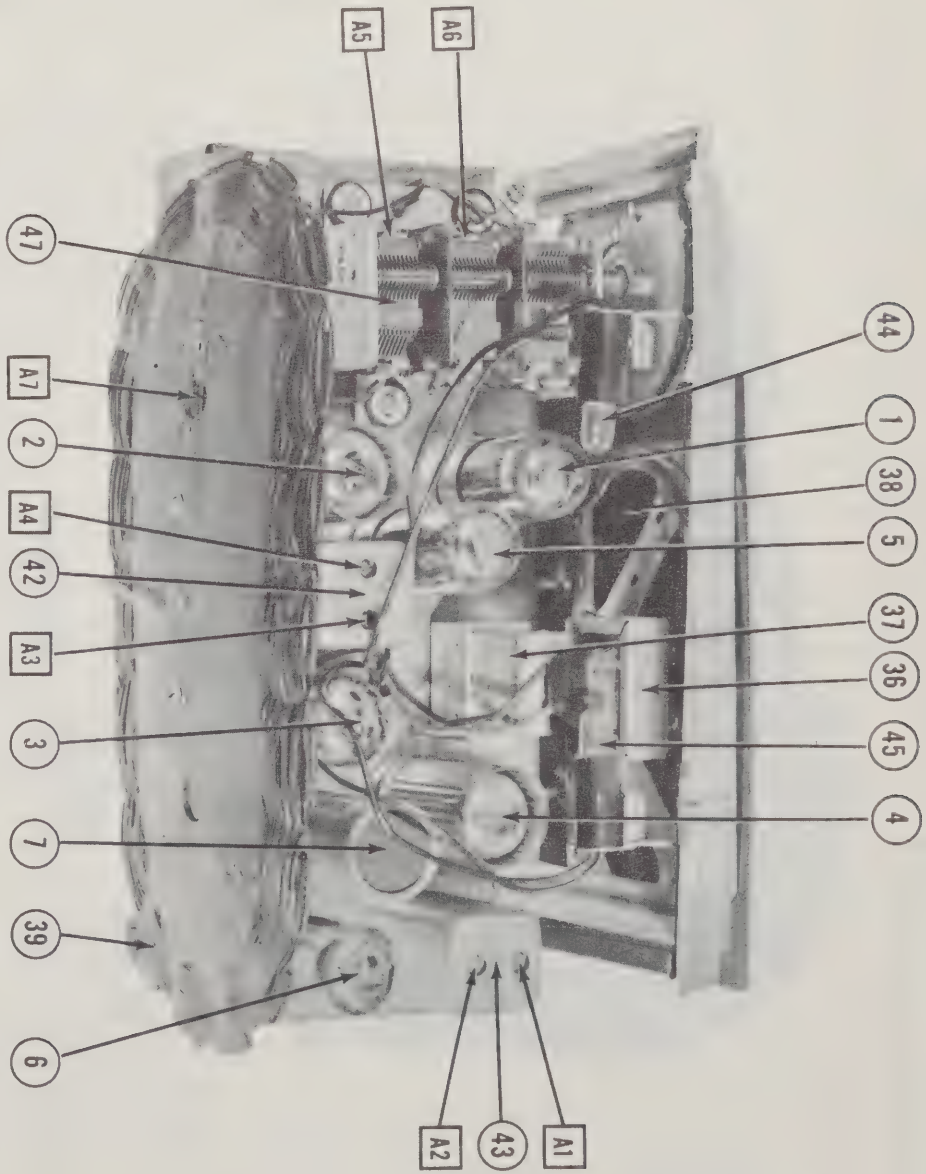
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BENDIX PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22A	1 Meg.	½	RV4S03	D13-137	M-63-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 22A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BENDIX PART No.	IRC PART No.	IDENTIFICATION CODES
23	220Ω	½	RC22A221M	BW-½-220	Red-Red-Br. RF Cathode
24	22KΩ	½	RC22A223M	BTS-22K	Red-Red-Or. Osc. Grid
25	3.3 Meg.	½	RC22A335M	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
26	1500Ω	½	RC22A152M	BTS-1500	Br.-Grn.-Red IF Cathode
27	4.7 Meg.	½	RC22A475M	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
28	220KΩ	½	RC22A224M	BTS-220K	Red-Red-Yl. AF Plate Load
29	470KΩ	½	RC22A474M	BTS-470K	Yl.-Vi.-Yl. Output Grid
30	150Ω	1	RC24A151K	BW-1-150	Br.-Grn.-Br. Output Cathode
31	1 Meg.	½	RC22A105M	BTS-1 Meg.	Br.-Blk.-Grn. Feedback
32	1200Ω	1	RC24A122K	RTA-1200	Br.-Red-Red Filter
33	180Ω	2	RC25A181K	BW-2-180	Br.-Gray-Br. "
34	47Ω	1		BW-1-47	Yl.-Vi.-Blk. Line Dropping
35	220KΩ	½	RC22A224M	BTS-220K	Red-Red-Yl. Line Isolation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		BENDIX PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
36	1900Ω	3.1Ω	130Ω	.5Ω	TA0001	A-3876#	T22S45#	A-2928#	#Bend mounting tabs down, file out slots and mount on original brackets.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			BENDIX PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	VC IMP.				†Fabricate new mounting bracket.
37	PM	3.1Ω	SP4000		46A15†	
	CONE DIA.	VC DIA.				
38	4"x6"	9/16"				

R F COILS

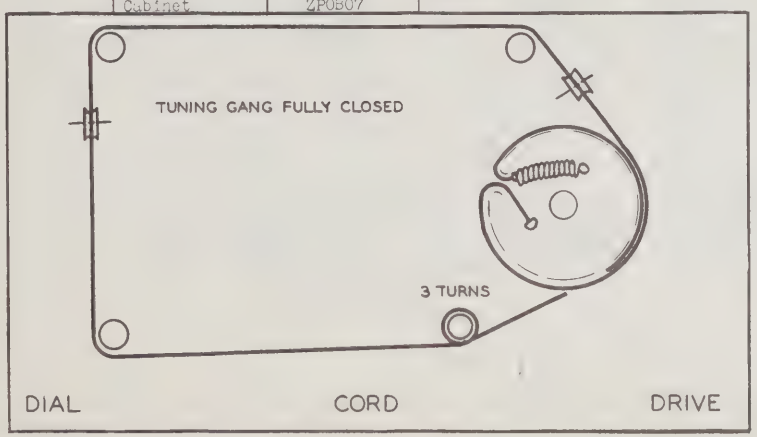
ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	BENDIX PART No.	MEISSNER PART No.
39	Loop Ant.	0Ω	.5Ω	AL0C06	
40	RF Coil	60Ω	3Ω	TR6L00	14-1057
41	Osc. Coil	.8Ω	5.5Ω	L05B01	14-1060
42	Input IF	23.5Ω	24Ω	TI0C01	16-6658
43	Output IF	24Ω		TI0D03	16-6670

DIAL LIGHT

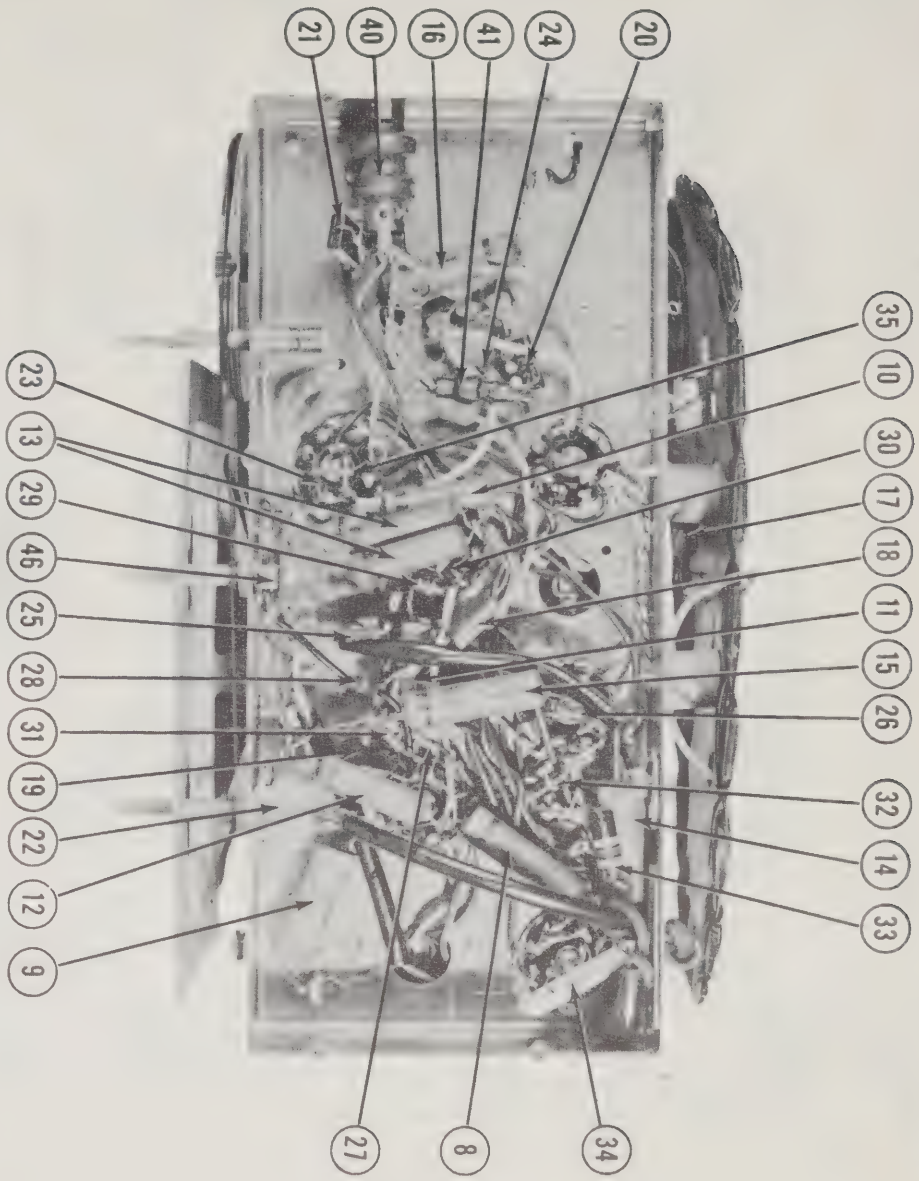
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					BENDIX PART No.		
44	Bayonet	6-8	0.15	Brown	#47		Type #47
45	"	"	"	"	#47		" "

MISCELLANEOUS

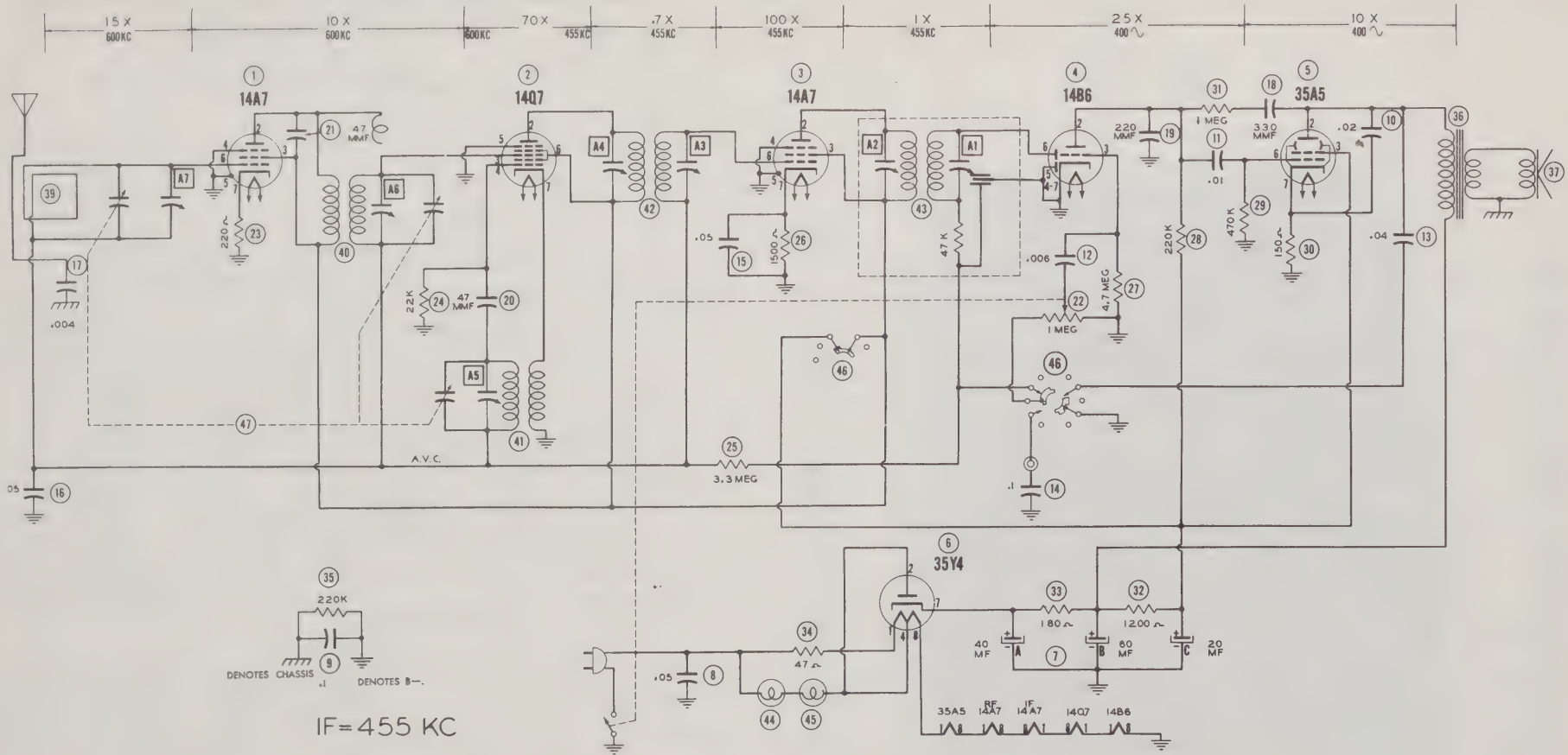
ITEM No.	PART NAME	BENDIX PART No.	NOTES
46	Switch	SR4C00	Radio-Phono-Tone
47	3 Gang Var. Cap	CV0C04	32-475MMF, 32-475MMF, 35-138MMF
	Dial Pointer	ID0M15	
	Dial Scale	DA0A35	
	Knob	KC0B00	
	"	KB0B04	Indexed
	Cabinet	ZP0B07	



CHASSIS—BOTTOM VIEW



BENDIX MODEL 65P4



VOLTAGE READINGS

RADIO-PHONO SWITCH IN RADIO POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14A7	50VAC	80VDC	80VDC	0V.	0V.	-.2VDC	2VDC	38VAC
2	14Q7	12VAC	80VDC	80VDC	-6VDC§	0V.	-.2VDC	0V.	25VAC
3	14A7	25VAC	80VDC	80VDC	0V.	0V.	0V.	5.3VDC	38VAC
4	14B6	12VAC	55VDC	-.4VDC	0V.	0V.	-.6VDC	0V.	0V.
5	35A5	85VAC	100VDC	105VDC	0V.	0V.	0V.	6.5VDC	50VAC
6	35Y4	112VAC	107VAC	112VAC	107VAC	117VAC	117VAC	115VDC	85VAC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14A7	54Ω	100KΩ	100KΩ	0Ω	0Ω	4.3 Meg.	220Ω	40Ω
2	14Q7	12Ω	100KΩ	100KΩ	22KΩ	0Ω	4.3 Meg.	.6Ω	25Ω
3	14A7	25Ω	100KΩ	100KΩ	0Ω	0Ω	24Ω	1.5KΩ	40Ω
4	14B6	12Ω	320KΩ	4.7 Meg.	0Ω	0Ω	1 Meg.	0Ω	0Ω
5	35A5	85Ω	100KΩ	100KΩ	0Ω	INF.	470KΩ	150Ω	54Ω
6	35Y4	120Ω	110Ω	115Ω	110Ω	120Ω	120Ω	1.0KΩ	38Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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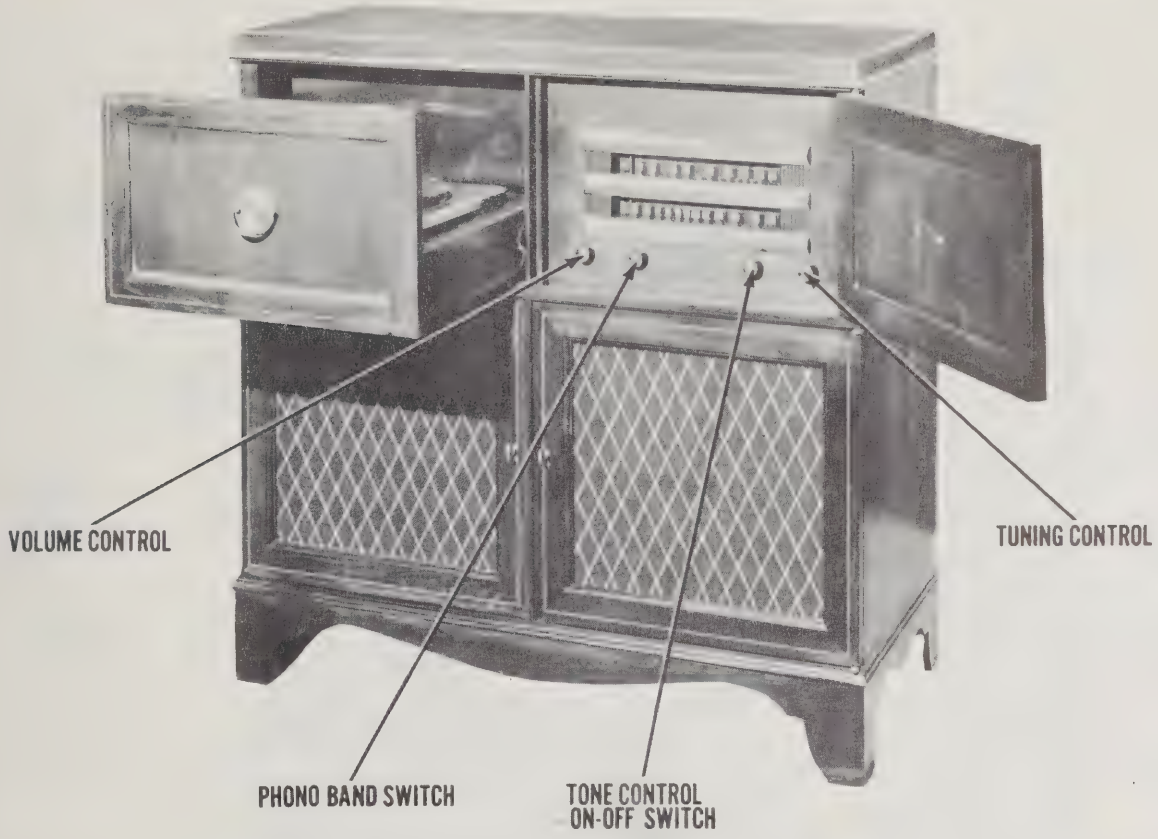
4822-4

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

CROSLEY MODELS 9-201, 9-202M, 9-203B



CROSLEY MODELS 9-201, 9-202M, 9-203B

CROSLEY MODEL 9-202M

TRADE NAME	Crosley, Models 9-201, 9-202M, 9-203B
MANUFACTURER	Crosley Corp., 1329 Arlington St., Cincinnati, Ohio
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Ant.
TUBES (EIGHT)	Types, 6SG7 RF Amp., 7F8 Oscillator, 6AC7/1852 Mixer, 6SG7 IF Amp., 6SG7 FM 2nd IF Amp., 6T8 Det.-AF Amp., AM AVC, 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	105-125 Volts AC — RATING .60 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC — FREQ. MOD. 88 - 108MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer 2-3/8" from left edge of dial backplate.

Use insulated alignment screwdriver for adjustments.

AM IF ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD	High side to Pin 4 (grid) 6SG7 1st IF Tube (4). Low side to chassis.	455KC	AM (fully clock-	Tuning cap. fully open.	Across voice coil	A1,A2,	Adjust for maximum output
2	.01 MFD	High side to rear AM stator of tuning cap. Low side to chassis.	"	"	"	"	A3,A4	Shunt 1000Ω resistor from Pin 8 of 6AC7 to junction of resistor 58 & cap. 22. Adjust A3 for maximum output. Transfer shunt to Pin 4 (grid) of 1st IF Tube (4) and junction of cap. (21) with 1st IF Trans. Adjust A4 for max. output. Remove shunt.
3	.01 MFD	"	"	"	"	"	A5	Adjust for minimum output

ALIGNMENT INSTRUCTIONS CONTINUED ON PAGE 8

HOWARD W. SAMS & CO., INC. Indianapolis Indiana

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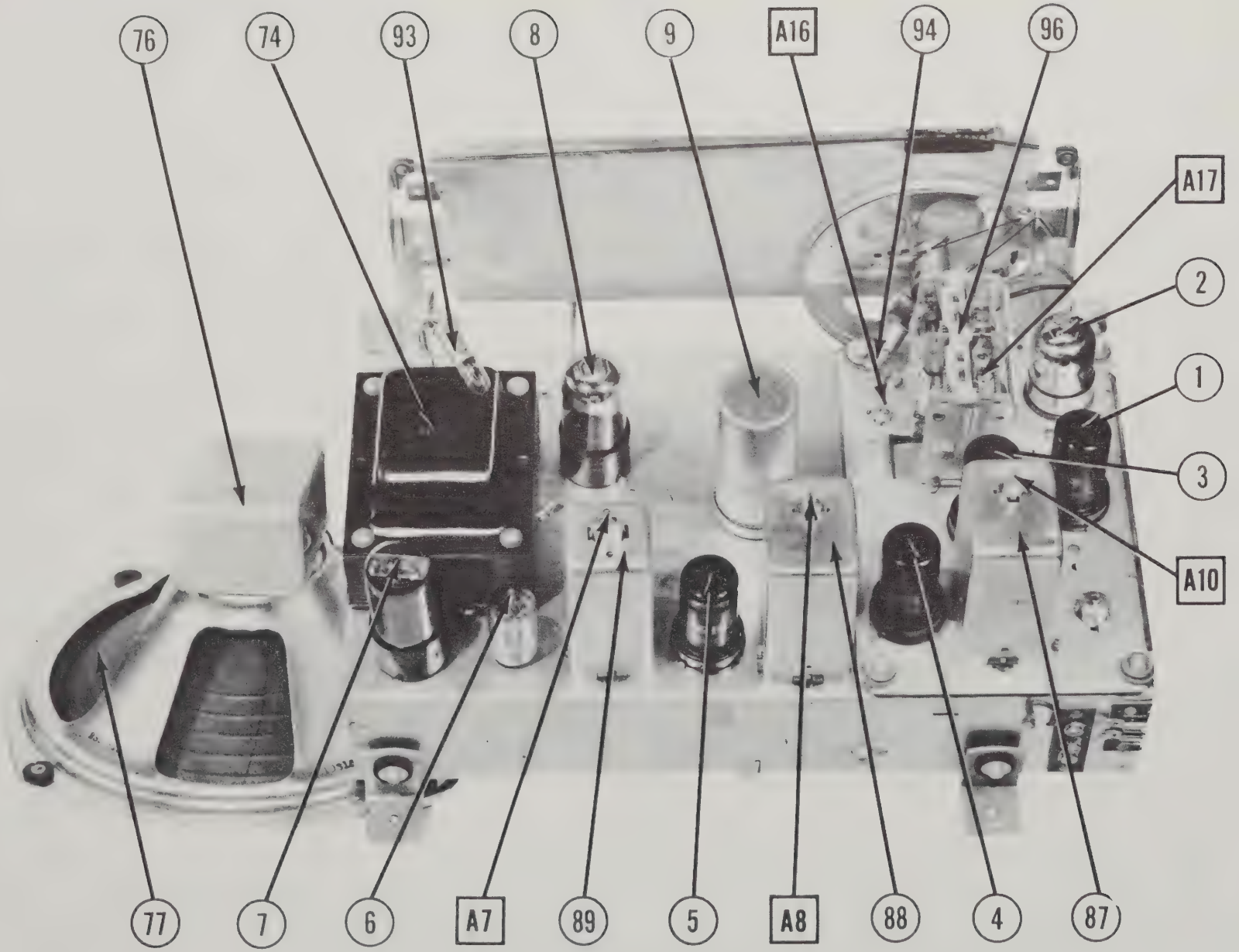
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SG7	6SG7	8BK	
2	Oscillator	7F8	7F8	8BW	
3	Mixer	6AC7/1852	6AC7/1852	8N	
4	IF Amp.	6SG7	6SG7	8BK	
5	FM 2nd IF Amp.	6SG7	6SG7	8BK	
6	Det.-AF Amp., AM AVC	6T8	6T8		
7	Power Output	6V6GT	6V6GT	7AC	
8	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CROSLEY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	40	450	143089	AF862J4A	UP43145C	DY-406	EL-424	◓ Filter
B	20	450						■ "
C	10	450						▲ "
D	20	25						Cathode Bypass
10	4	50	142958	PRS150/4	BR415	M-4-450	UT-41	Stabalizing Cap.
11	.005	600	39001-11	684-005	GT6D5	ST-6-005	TC-25	Output Plate Bypass
12	.025	600	39001-80	684-03	GT6S25	ST-6-03	TC-13	Audio Coupling
13	.01	600	39001-13	684-01	GT6S1	ST-6-01	TC-11	" " -Note
14	.005	600	39001-11	684-005	GT6D5	ST-6-005	TC-25	Tone Compensation
15	.01	200	39001-13	484-01	GT2S1	ST-4-01	TC-11	" "
16	.0001	600	39001-1	1468-0001	GT6T1	MO.5-31	TC-31	AF Plate Bypass
17	.01	200	39001-13	484-01	GT2S1	ST-4-01	TC-11	Limiter Cathode Bypass
18	.01	600	39001-13	684-01	GT6S1	ST-6-01	TC-11	Limiter Decoupling
19	.01	600	39001-13	684-01	GT6S1	ST-6-01	TC-11	1st IF Plate Decoup.
20	.01	600	39001-13	684-01	GT6S1	ST-6-01	TC-11	1st IF Screen Bypass
21	.01	400	39001-13	484-01	GT4S1	ST-4-01	TC-11	AVC Filter
22	.01	600	39001-13	684-01	GT6S1	ST-6-01	TC-11	Mixer Plate Decoupling
23	.01	600	39001-13	684-01	GT6S1	ST-6-01	TC-11	Mixer Screen Bypass
24	.01	600	39001-13	684-01	GT6S1	ST-6-01	TC-11	RF Decoupling
25	.01	600	39001-13	684-01	GT6S1	ST-6-01	TC-11	RF Screen Bypass
26	.01	400	39001-13	484-01	GT4S1	ST-4-01	TC-11	AVC Filter
27	1000	300	137727-8	1468-001	1W5D1	MO.3-21	1FM-21	FM Diode Load Cap.-Cer.
28	3.3	500	137398-5					Balancing Cap. "
29	1000	300	137727-8	1468-001	1W5D1	MO.3-21	1FM-21	De-emphasis "
30	1000	300	137727-8	1468-001	1W5D1	MO.3-21	1FM-21	IF Grid Filter "
31	330	500	143223-10	1468-00035	5W5T3	MO.5-33	1FM-335	RF Coupling "
32	10	500	137727-44	1468-00001	5W5Q1	MO.5-41	1FM-41	Osc. Coupling "
33	3.3	500	137398-5					Fixed Trimmer "
34	33	500	137727-53	1468-00004	5W5Q3	MO.5-43	MS-43	Osc. Grid Cap. "
35	33	500	137727-53	1468-00004	5W5Q3	MO.5-43	MS-43	Osc. Feedback "
36	50	300	143112					Fixed Trimmer "
37	1000	300	137727-8	1468-001	1W5D1	MO.3-21	1FM-21	RF Bypass "
38	1000	300	137727-8	1468-001	1W5D1	MO.3-21	1FM-21	Osc. Decoupling "
39	5000	500	137727-48	1467-005	1D5D5	MW.5-25	1FM-25	RF Coupling "
40	100	300	137727-1	1468-0001	5W5T1	MO.5-31	1FM-31	" " "
41	33	300	137727-53	1468-00004	5W5Q3	MO.5-43	MS-43	Ext. Ant. Coup. "
42	1000	300	137727-8	1468-001	1W5D1	MO.3-21	1FM-21	Fil. Bypass "
43	1000	300	137727-8	1468-001	1W5D1	MO.3-21	1FM-21	" " "

Note-Wind same number of turns around replacement as on the original part.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CROSLEY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
44A	1 Meg.	½	39368-14	D13-137X	AT-98	Volume Control tapped @ 300KΩ B143355#
B	Shaft		39370-2	E	KSS-3	Attach to 44A per instructions
45A	3 Meg.	½	39368-22			Tone Control B143356#
B	Shaft		39370-2			Attach to 45A per instructions
C	Switch		39369-1			" " " "

#Replaces complete unit.

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: MEISSNER PART No.	
78	Loop Ant.		0Ω	139692		
79	FM Dipole		0Ω			
80	Ant.Coil BC		4.3Ω	144010		
81	" " FM	0Ω	0Ω	143650		
82	Wave Trap Coil		8Ω	143179		
83	Peaking Coil BC		21Ω	143606		
84	RF Coil FM		0Ω	143502		
85	Osc. " BC		8Ω	143180	14-1060	
86	" " FM		0Ω	143305		§Includes resistance of both secondaries
87A	1st IF AM	6.2Ω	6.5Ω§	143090		
B	" " FM	.2Ω		143090		**Includes resistance of both primaries
88A	2nd IF AM	6.4Ω**		143105		
B	" " FM		.4Ω	143105		
89	FM Det. Trans.	.7Ω	.5Ω	143378		
90	RF Plate Choke		.6Ω	143752		
91	Osc. Plate Choke		.6Ω	143752		
92	Fil. Choke		0Ω	136720		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
93	Bayonet	6-8	0.15	Brown	138437-1		Type #47
94	"	"	"	"			"

MISCELLANEOUS

ITEM No.	PART NAME	CROSLEY PART No.	NOTES
95	Switch	142968	Band
96	3 Gang Var. Cap	142775	
A5	Trimmer	137219-5	Wave Trap Adj.
A14	"	137219-4	FM Ant. Adj. (Sec.)
A16	"	143014	BC Osc. Adj.
	Dial Glass	143413	
	Dial Pointer	143414	
	Knob	138576-6	
	"	143778	(Band switch)
	Cabinet	143403	Model 201
	"	143458	Model 202M
	"	143409	Model 203B

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CROSLEY PART No.	IRC PART No.	
46	1 Meg.	½	39373-92	BTS-1 Meg.	Br.-Blk.-Grn. Antenna Loading
47	1 Meg.	½	39373-92	BTS-1 Meg.	Br.-Blk.-Grn. RF Grid
48	47KΩ	½	39373-67	BTS-47K	Yl.-Vi.-Or. RF Screen Dropping
49	2200Ω	½	39373-40	BTS-2200	Red-Red-Red RF Plate Load
50	2200Ω	½	39373-40	BTS-2200	Red-Red-Red RF Plate Decoupling
51	220KΩ	½	39373-80	BTS-220K	Red-Red-Yl. AVC Network
52	68KΩ	½	39373-71	BTS-68K	Blue-Gray-Or. Oscillator Grid
53	33KΩ	½	39373-64	BTS-33K	Or.-Or.-Or. Oscillator Plate Load
54	2200Ω	½	39373-40	BTS-2200	Red-Red-Red Oscillator Plate Decoupling
55	2.2 Meg.	½	39373-97	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
56	1 Meg.	½	39373-92	BTS-1 Meg.	Br.-Blk.-Grn. Mixer Grid
57	150KΩ	½	39373-77	BTS-150K	Br.-Grn.-Yl. Mixer Screen Dropping
58	2200Ω	½	39373-40	BTS-2200	Red-Red-Red Mixer Plate Decoupling
59	47KΩ	½	39373-67	BTS-47K	Yl.-Vi.-Or. 1st IF Screen Dropping
60	2200Ω	½	39373-40	BTS-2200	Red-Red-Red 1st IF Plate Decoupling
61	22KΩ	½	39373-60	BTS-22K	Red-Red-Or. Diode Load
62	270Ω	½	39373-21		Red-Vi.-Br. Limiter Cathode
63	39KΩ	½	39373-65	BTS-39K	Or.-White-Or. Limiter Bleeder
64	33KΩ	1	39373-174	BTA-33K	Or.-Or.-Or. Limiter Decoupling
65	33KΩ	½	39373-64	BTS-33K	Or.-Or.-Or. De-emphasis
66	27KΩ	½	39373-62	BTS-27K	Red-Vi.-Or. Ratio Detector Diode Load
67	33KΩ	½	39373-64	BTS-33K	Or.-Or.-Or. Tone Compensation
68	10 Meg.	½	39373-107	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
69	330KΩ	½	39373-84	BTS-330K	Or.-Or.-Yl. AF Plate Load
70	470KΩ	½	39373-87	BTS-470K	Yl.-Vi.-Yl. Output Grid
71	270Ω	1	39373-171	BW-1-270	Red-Vi.-Br. Output Cathode
72	1000Ω	2	39373-253	BT-2-1000	Br.-Blk.-Red Filter
73	1000Ω	10	39371-5	AB-1000	"
97	22KΩ	½	39373-60	BTS-22K	Red-Red-Or. Peaking Coil Shunt
98	33KΩ	½	39373-64	BTS-33K	Or.-Or.-Or. Tone Compensation

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	CROSLEY PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
74	117V AC @ .6A	650V CT @.082A	5.0V AC @ 2.0A	6.6V AC @ 2.75A	135105	P-6013‡	T22R05	P-2953

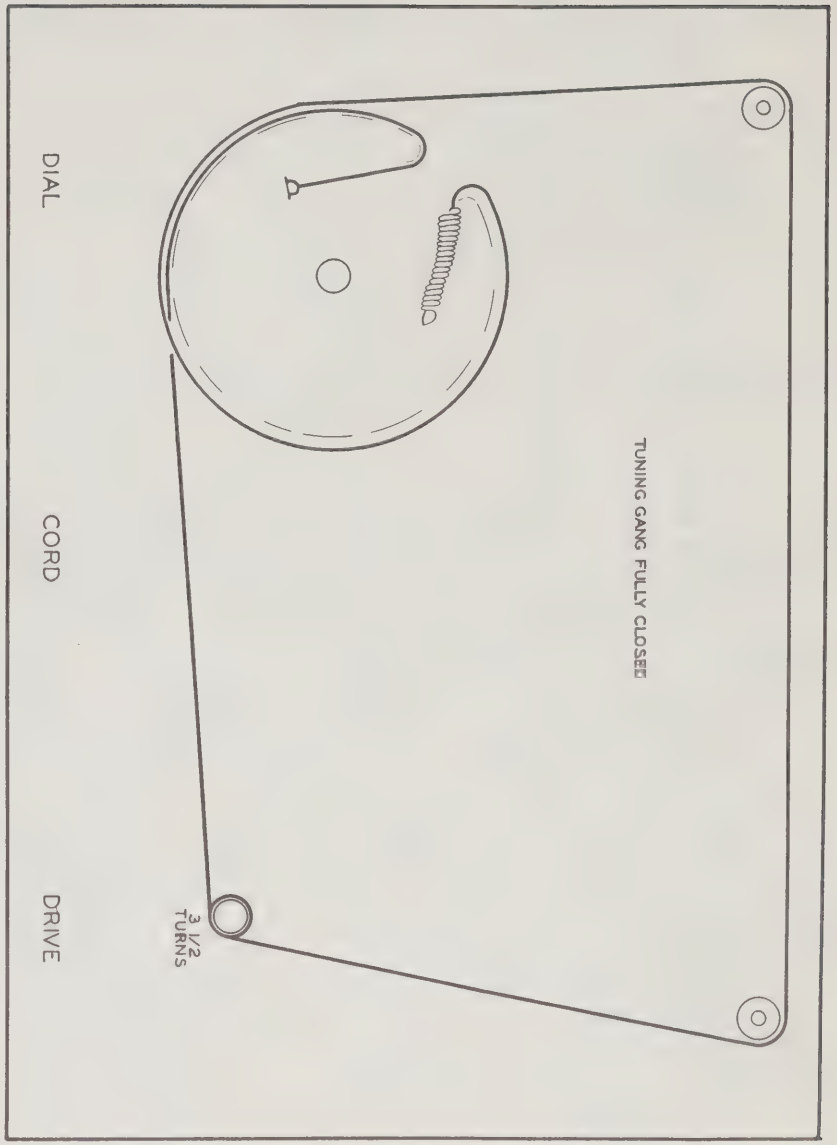
Original Part #B-142955.
‡Use series resistor to reduce plate voltage.

TRANSFORMER (OUTPUT)

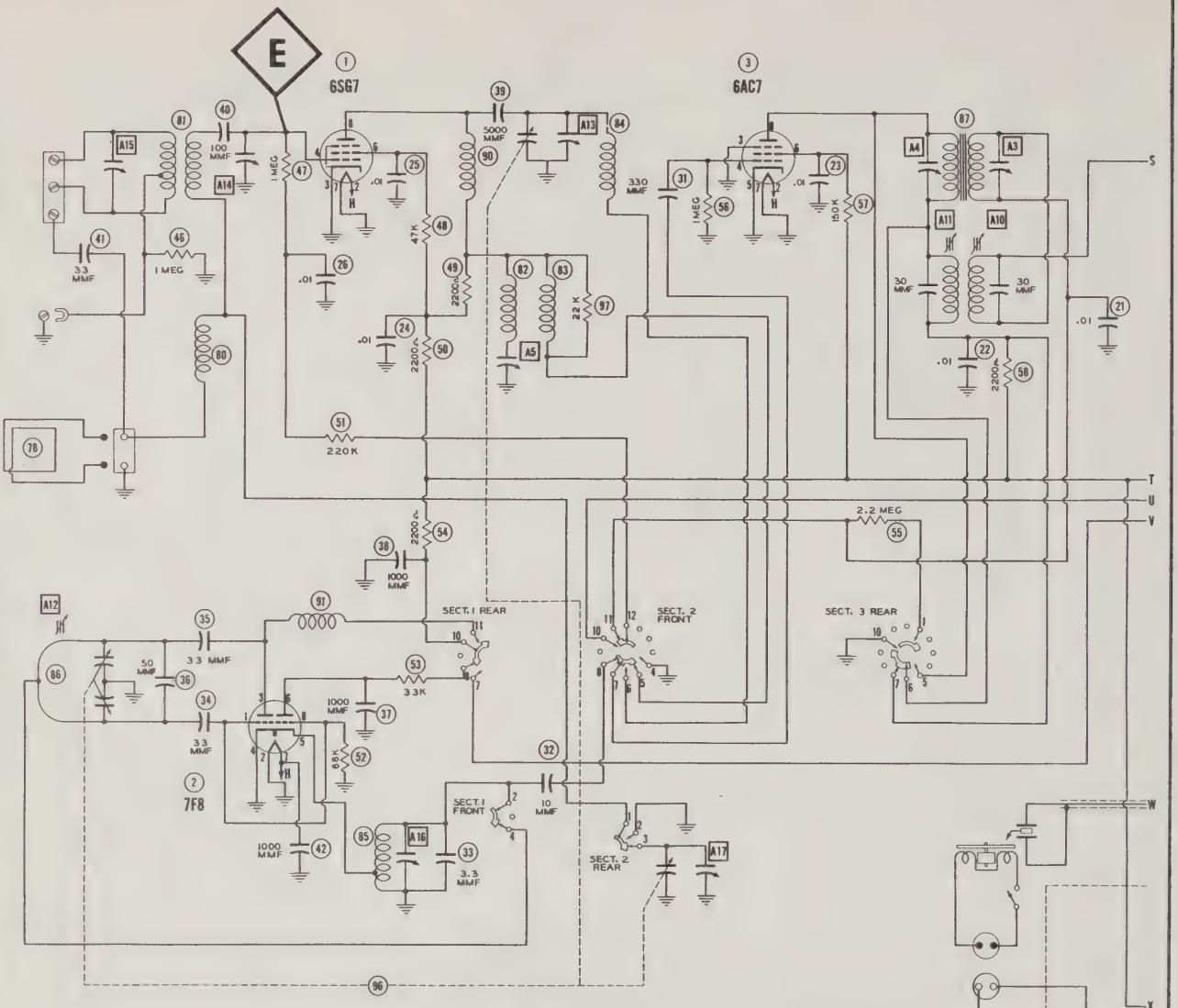
ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CROSLEY PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
75A	3900Ω	3.9Ω	260Ω	.3Ω	B-138131-2	A-3823	T22S87	A-2902*	*Drill one new mounting hole.
B	4300Ω	3.9Ω	430Ω	.6Ω	B-139295	A-3825	T22S60	A-2902*	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	CROSLEY PART No.	JENSEN PART No.	QUAM PART No.	
76	PM	3.9Ω	138762-5	ST-119† Mod. P10-T	10A31	Original Part #C-143456 †Replace output transformer to match 6-8Ω voice coil.
	CONE DIA.	VC DIA.				
77	9-7/16"	1"				



DATE 12/48-#4822-5 SET #52-FOLDER #5



VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6SG7	0V.	6.6VAC	0V.	-.6VDC	0V.	172VDC	0V.	200VDC	-
2A	7F8	-5.6VDC§	0V.	-.3VDC	0V.	0V.	178VDC	6.6VAC	-5.6VDC§	-
‡ 2B	7F8	-3.8VDC§	0V.	182VDC	0V.	0V.	0V.	6.6VAC	-3.8VDC§	-
3	6AC7	0V.	6.6VAC	0V.	-.5VDC	0V.	100VDC	0V.	227VDC	-
4	6SG7	0V.	6.6VAC	0V.	-.3VDC	0V.	112VDC	0V.	217VDC	-
‡ 5	6SG7	0V.	0V.	.9VDC	0V.	.9VDC	5.4VDC	6.6VAC	50VDC	-
‡ 6	6T8	-.1VDC	-2.4VDC	.1VDC	6.6VAC	0V.	-.6VDC	0V.	-.2VDC	87VDC
7	6V6GT	0V.	0V.	.48VAC	285VDC	0V.	285VDC	6.6VAC	1.25VDC	-
8	5Y3GT	0V.	330VDC	0V.	.525VAC	0V.	.525VAC	0V.	330VDC	-

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6SG7	0Ω	.1Ω	0Ω	4.5 Meg.	0Ω	120KΩ	0Ω	75KΩ	-
2A	7F8	70KΩ	0Ω	INF.	0Ω	1.2Ω	100KΩ	.1Ω	70KΩ	-
‡ 2B	7F8	70KΩ	0Ω	75KΩ	0Ω	1.2Ω	INF.	.1Ω	70KΩ	-
3	6AC7	0Ω	.1Ω	0Ω	1 Meg.	0Ω	210KΩ	0Ω	75KΩ	-
4	6SG7	0Ω	.1Ω	0Ω	3.2 Meg.	0Ω	120KΩ	0Ω	75KΩ	-
‡ 5	6SG7	0Ω	0Ω	270Ω	22KΩ	270Ω	40KΩ	.1Ω	40KΩ	-
‡ 6	6T8	1.1 Meg.	27KΩ	1.1 Meg.	.1Ω	0Ω	1.1 Meg.	0Ω	10 Meg.	400KΩ
7	6V6GT	0Ω	0Ω	70KΩ	70KΩ	470KΩ	60KΩ	.1Ω	270Ω	-
8	5Y3GT	INF.	70KΩ	INF.	120Ω	0Ω	110Ω	INF.	75KΩ	-

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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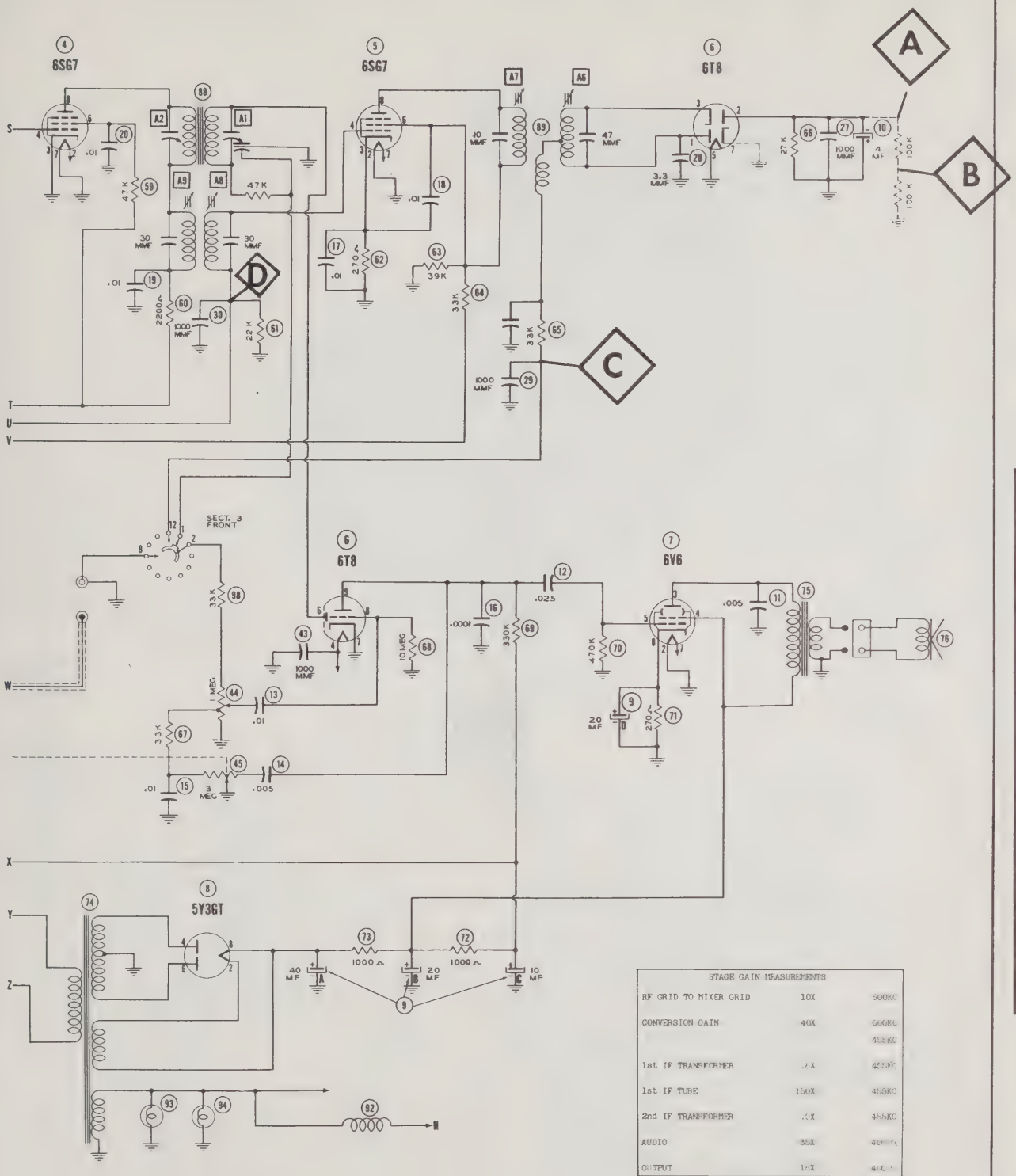

STAGE GAIN MEASUREMENTS		
RF GRID TO MIXER GRID	10X	600KC
CONVERSION GAIN	40X	666KC 455KC
1st IF TRANSFORMER	.6X	455KC
1st IF TUBE	150X	455KC
2nd IF TRANSFORMER	.6X	455KC
AUDIO	35X	400 [illegible]
OUTPUT	1.5X	4 [illegible]

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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FM RATIO DETECTOR ALIGNMENT

Connect two 100KΩ resistors (within 5% of each other) from Point Ⓐ to chassis. The junction of these two resistors is Point Ⓔ.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4	1000MMF	High side to Pin 4 (grid) 6SG7 2nd IF Tube (5). Low side to chassis.	10.7MC (Unmodulated)	FM (Center position)	Tuning cap. fully closed	DC probe to Point Ⓓ. Common to Point Ⓔ. (See prealignment notes)	A6	Adjust for zero deflection.
5	1000MMF	"	"	"	"	DC probe to Point Ⓓ. Common to chassis.	A7	Adjust for maximum deflection.

FM IF-RF ALIGNMENT USING FM SIGNAL GENERATOR OSCILLOSCOPE & OUTPUT METER

In all steps where scope is used, use frequency modulated signal with 60 ∿ modulation and sweep as specified. If a 60 ∿ synchronizing voltage is available from signal generator connect it to horizontal input of scope. If it is not available from signal generator it may be obtained from AC power line. Some phase shift may be encountered resulting in a double trace pattern. If scope or signal generator has a phase control rotate it until a single trace pattern is obtained. If this control is not available or synchronizing voltage is taken from AC power line the same thing may be accomplished by connecting a capacitor of suitable value (.01 to .1 MFD) in series with synchronizing voltage input.

In all steps where scope is used, marker signal generator consists of AM signal generator with good stability and reliable calibration. Connect it to FM signal generator with a 10 MMFD capacitor. Turn up output until a satisfactory pip is observable.

In Step 11 a signal generator having .1 volt output and 30MC sweep, and scope having at least .05 volt per inch sensitivity must be used in order to obtain a pattern similar to Fig. 2. If such equipment is not available then the method in Step 11 of Alternate FM IF-RF Alignment Using AM Signal Generator and VTVM must be used.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6	1000MMF	High side to Pin 4 (grid) 6SG7 1st IF Tube (4). Low side to chassis.	10.7MC (Freq. Modulated 60 ∿ Mod. 450KC sweep)	FM (Center position)	Tuning cap. fully closed	Vertical input to Point Ⓓ. Ground to chassis.	A5, A9	Adjust for maximum ampli- and symmetry of pattern on either side of marker pip per Fig. 1.
7	1000MMF	High side to rear FM stator of tuning cap. Low side to chassis.	"	"	"	"	A10, A11	"
						OUTPUT METER		
8	2- 39Ω carbon res.	Each side in series with 39Ω to FM dipole terminals.	98MC (Freq. Modulated 4MC sweep 400 ∿ Mod.)	"	5-7/16" from left edge of dial backplate.	"	A12	Adjust for maximum output
9	"	"	92MC	"	Tune for maximum output.	"	FM RF Coil (Copper strap)	Adjust copper strap FM RF Coil for maximum output by varying spacing slightly between strap and hairpin FM Osc. Coil.
10	"	"	104MC	"	"	"	A13	Adjust for maximum output
						CONNECT SCOPE		
11	2- 39Ω carbon res.	Each side in series with 39Ω to FM Dipole Terminals. (Connect marker gen. in series with 10 MMFD to high side of FM sig. gen.)	98MC (Freq. Mod. 60 ∿ Modulation & 30MC sweep. See prealignment notes)	FM (Center position)	Tuning cap. fully closed	Vertical input in series with 100KΩ res. to Point Ⓔ. Ground to chassis.	A14, A15	Adjust for maximum amplitude & symmetry of pattern per Fig. 2. Check for band pass at 92, 98 & 104MC with marker sig. gen.

FM IF-RF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6	1000MMF	High side to Pin 4 (grid) 6SG7 1st IF Tube (4). Low side to chassis.	10.7MC (Unmodulated)	FM (Center position)	Tuning cap. fully closed	DC probe to Point Ⓓ. Common to chassis.	A8, A9	Adjust for maximum deflection.
7	1000MMF	High side to rear FM stator of tuning cap. Low side to chassis.	"	"	"	"	A10, A11	" " " "
8	2- 39Ω carbon res.	Each side in series with 39Ω to FM Dipole terminals.	98MC (Unmodulated)	"	5-11/32" from left edge of dial backplate	"	A12	" " " "
9	"	"	92MC	"	Tune for maximum deflection.	"	FM RF Coil (Copper strap)	Adjust FM RF Coil for maximum deflection. Vary spacing slightly between copper strap and hairpin FM Osc. Coil.
10	"	"	104MC	"	"	"	A13	Adjust for maximum deflection.
11	"	"	98MC	"	Tuning cap. fully closed	DC probe in series with 100KΩ res. to Point Ⓔ. Common to chassis.	A14, A15	Shunt primary of FM Ant. Coil with 10Ω carbon res. and adjust A14 for maximum deflection. Transfer shunt to secondary and adjust A15 for maximum deflection. Remove shunt.

AM RF ALIGNMENT

AM RF Alignment must not be attempted unless loop is connected or a loop dummy is substituted for it. Dummy antenna consists of 185 microhenry choke shunted with 56MMFD capacitor connected across loop terminals.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
12	200MMFD	High side to ext. AM ant. terminal Low side to chassis. If loop is not connected a loop dummy must be shorted across loop terminals. (See prealignment notes for specifications.	1400KC	AM (Fully clockwise)	8-5/16" from extreme left edge of dial backplate.	Across voice coil	A16	Adjust for maximum output
13	200MMFD	"	"	"	Tune for maximum output.	"	A17	" " " "

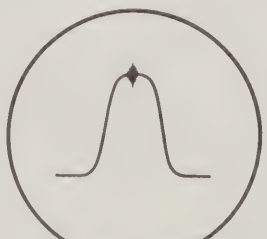


FIG. 1

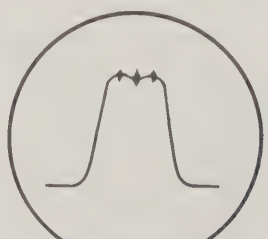
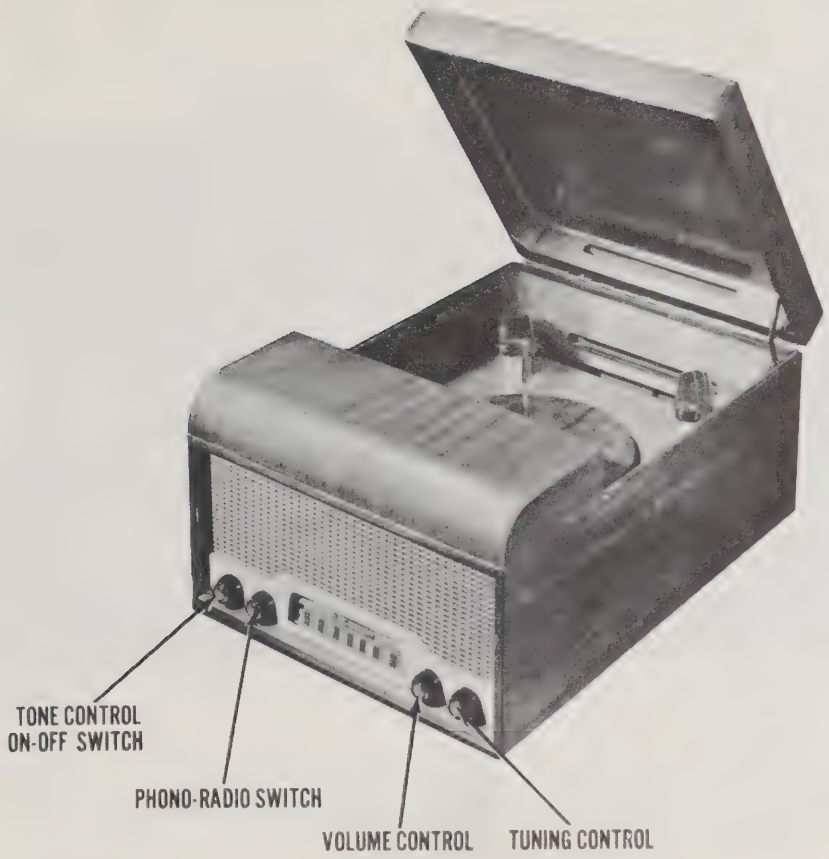


FIG. 2

FOR AM IF ALIGNMENT SEE PAGE 1.

DELCO MODELS
R-1244, R-1245, R-1246



DELCO MODELS
R-1244, R-1245, R-1246

DELCO MODEL R-1244

TRADE NAME	Delco, Models R-1244, R-1245, R-1246
SUPPLIER	United Motors Service, Div., of GMC, General Motors Bldg., Detroit 2, Mich.
TYPE SET	AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 6BA6 RF Amp., 6BE6 Converter, 6BA6 IF Amp., 6AT6 Det.-AVC-AF, 6K6GT Power Output, 5Y3GT Rectifier
POWER SUPPLY	105-125 Volts AC
TUNING RANGE—BROADCAST	550-1600KC RATING .43 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to front stator of tuning cap. Low side to chassis.	262KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2	220MMFD	"	1615KC	"	"	A5	" " " "
3	220MMFD	High side to ext. ant. lead. Low side to chassis.	1400KC	Tune for maximum output.	"	A6,A7	" " " "
4	220MMFD	"	600KC	"	"	A8	Rock tuning cap. and adjust for maximum output. Repeat Steps 2, 3 & 4 until no further improvement can be made, making Step 3 the last step.

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PARTS LIST AND DESCRIPTIONS

DELCO MODEL R-1244

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: DELCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6BA6	6BA6	7BK	
2	Converter	6BE6	6BE6	7CH	
3	IF Amp.	6BA6	6BA6	7BK	
4	Det.-AVC-AF	6AT6	6AT6	7BT	
5	Power Output	6K6GT	6K6GT	7S	
6	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	20	400	M908	AF44J4A	UP2245C	DY-312	EL-322	■ Filter
B	20	400						▲ "
C	20	25						Cathode Bypass
8	.01	600	E103	684-01	GT6S1	ST-6-01	TC-11	Line Filter
9	.02	1000	H203	1084-02	GT16S2	STM-10-02	TR-12	Output Plate Bypass
10	.002	600	E202	684-002	GT6D2	ST-6-002	TC-22	Tone Compensation
11	.005	600	E502	684-005	GT6D5	ST-6-005	TC-25	" " -Note 1
12	.1	400	E104	484-.1	GT4P1	ST-4-.1	TC-1	Screen Decoupling
13	.05	200	E503	484-05	GT2S5	ST-4-05	TC-15	AVC Filter
14A	10000	450	E103	684-01	GT6S1	ST-6-01	TC-11	Audio Coupling-Cer.- Note 2
B	250	450	G271	1468-00025	5W5T25	MO.5-325	1FM-325	AF Plate Byp. -Cer.-Note2
15	4700	500	G472	684-005	GT6D5	ST-6-005	TC-25	Audio Coupling-Note 2
16	51	300	7238511	1468-00005	5W5Q5	MO.5-45	1FM-45	Osc. Grid Cap.- " "
17	821	500	G821					Fixed Padder
18	150	300	G151	1468-00015	5W5T15	MO.5-315	1FM-315	RF Coupling-Cer.
19	150	300	G151	1468-00015	5W5T15	MO.5-315	1FM-315	" " "

Note 1-Used only on R-1245 & R-1246 models.
Note 2-Items number 14A & B and 32A & B are combined into one unit obtainable under Manufacturers Part #1218204.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DELCO PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
20A	2 Meg.	½	1218070	D13-139	AM-66-Z	Volume Control used in Model R-1244
B	Shaft		Not Req.	E	KSS-3	Attach to 20A per instructions
20A	2 Meg.	½	1218536	D18-139XX†	AT-121†	Volume Control tapped @ 250KΩ, used in Model R-1245 & R-1246
B	Shaft		Not Req.	E	KSS-3	Attach to 20A per instructions
21A	2 Meg.	½	1218078	D13-139	AM-66-Z	Tone Control
B	Shaft		Not Req.	E	KSS-3	Attach to 21A per instructions
C	Switch		" "	41	SW-A	" " " " "

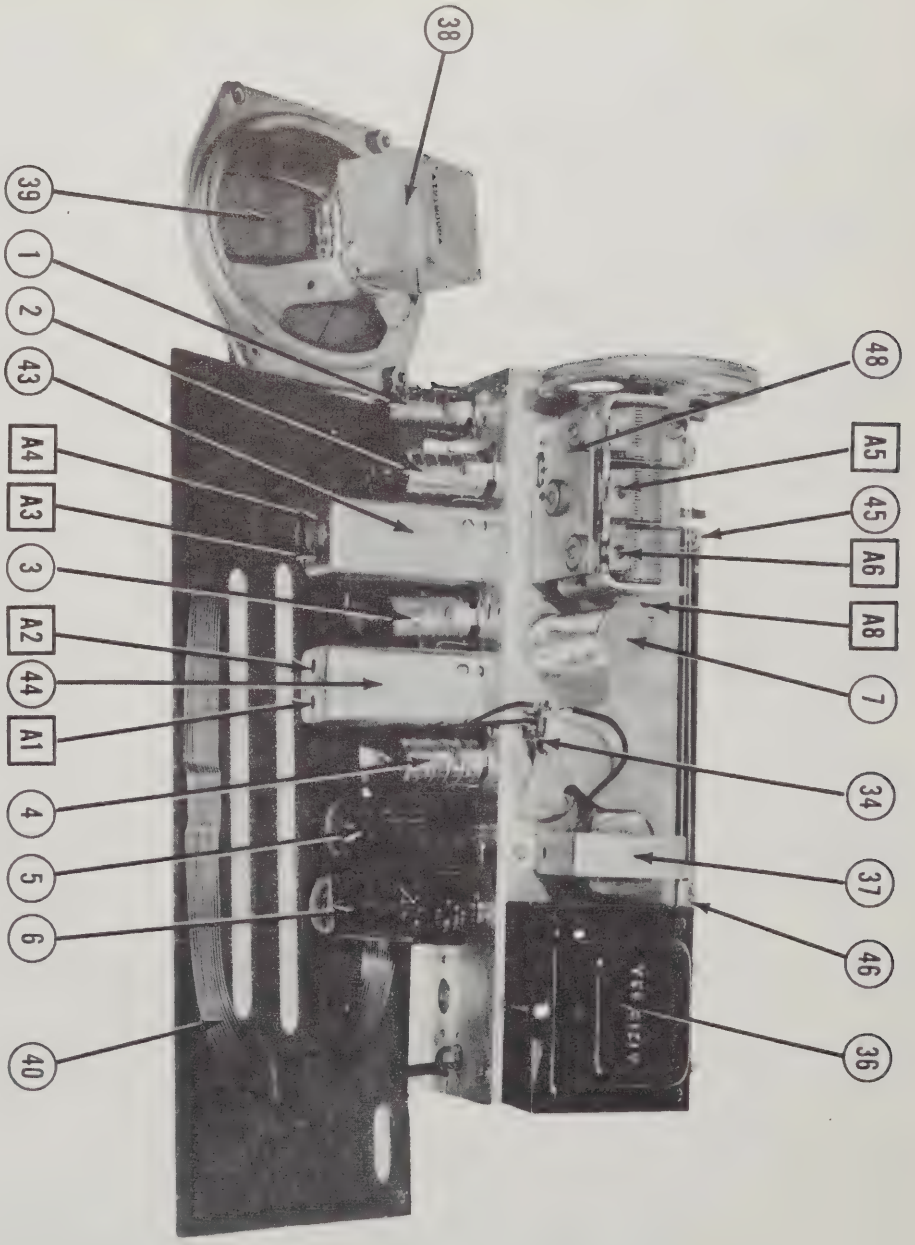
†Use #1 tap only.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DELCO PART No.	IRC PART No.	IDENTIFICATION CODES
22	2.2 Meg.	½	A225	BTS-2.2 Meg.	Red-Red-Grn. RF Grid
23	2.2 Meg.	½	A225	BTS-2.2 Meg.	Red-Red-Grn. Conv. Grid
24	100Ω	½	A101	BW-½-100	Br.-Blk.-Br. Parasitic Suppressor
25	22KΩ	½	A223	BTS-22K	Red-Red-Or. Osc. Grid
26	15KΩ	2	C153	BT-2-15K	Br.-Grn.-Or. Screen Dropping
27	1 Meg.	½	A105	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
28	470KΩ	½	A474	BTS-470K	Yl.-Vl.-Yl. Diode Load
29	6.8 Meg.	½	A685	BTS-6.8 Meg.	Blue-Gray-Grn. AF Grid
30	22Ω	½	A22C	BW-½-22	Red-Red-Blk. AF Cathode
31	47KΩ	½	A473	BTS-47K	Yl.-Vl.-Or. Tone Compensation-See Note 1
32A	250KΩ	½	A274	BTS-270K	AF Plate Load-See Note 2
B	500KΩ	½	A474	BTS-470K	Output Grid-See Note 2
33	470Ω	1	B471	BTS-470	Yl.-Vl.-Br. Output Cathode
34	47Ω	2	A470	BW-½-47	Yl.-Vl.-Blk. Feedback
35	800Ω	10	1218241	AB-800	Filter

Note 1-Used on Models R-1245 and R-1246 only.
Note 2-Item numbers 32A, 32B and 14A, 14B are combined into one unit obtainable under Manufacturers Part #1218204.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	DELCO PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
36	117V AC @ .43A	560V CT .058A DC	5.4V AC @ 2.0A	6.5V AC @ 2.0A	1217165	P-6120‡	T22R04	P-2957‡

‡Add series resistor to reduce plate voltage.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		DELCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
37	4400Ω	3.5Ω	390Ω	.4Ω	1218118	A-3823	T22887	A-2901	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			DELCO PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	VC IMP.				
38	PM	3.5Ω	1218090			
	CONE DIA.	VC DIA.				
39	5"x7"	3/4"				

R F COILS

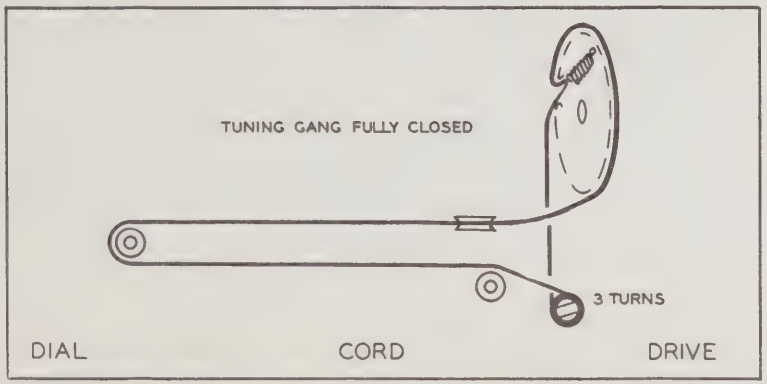
ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	DELCO PART No.	MEISSNER PART No.
40	Loop Ant.	0Ω	1.5Ω	1218390	
41	RF Coil	125Ω	7.5Ω	1218677	
42	Osc. Coil		5.8Ω	1218679	14-1060
43	Input IF	41Ω	42Ω	1218676	16-6652
44	Output IF	43Ω		1218088	

DIAL LIGHT

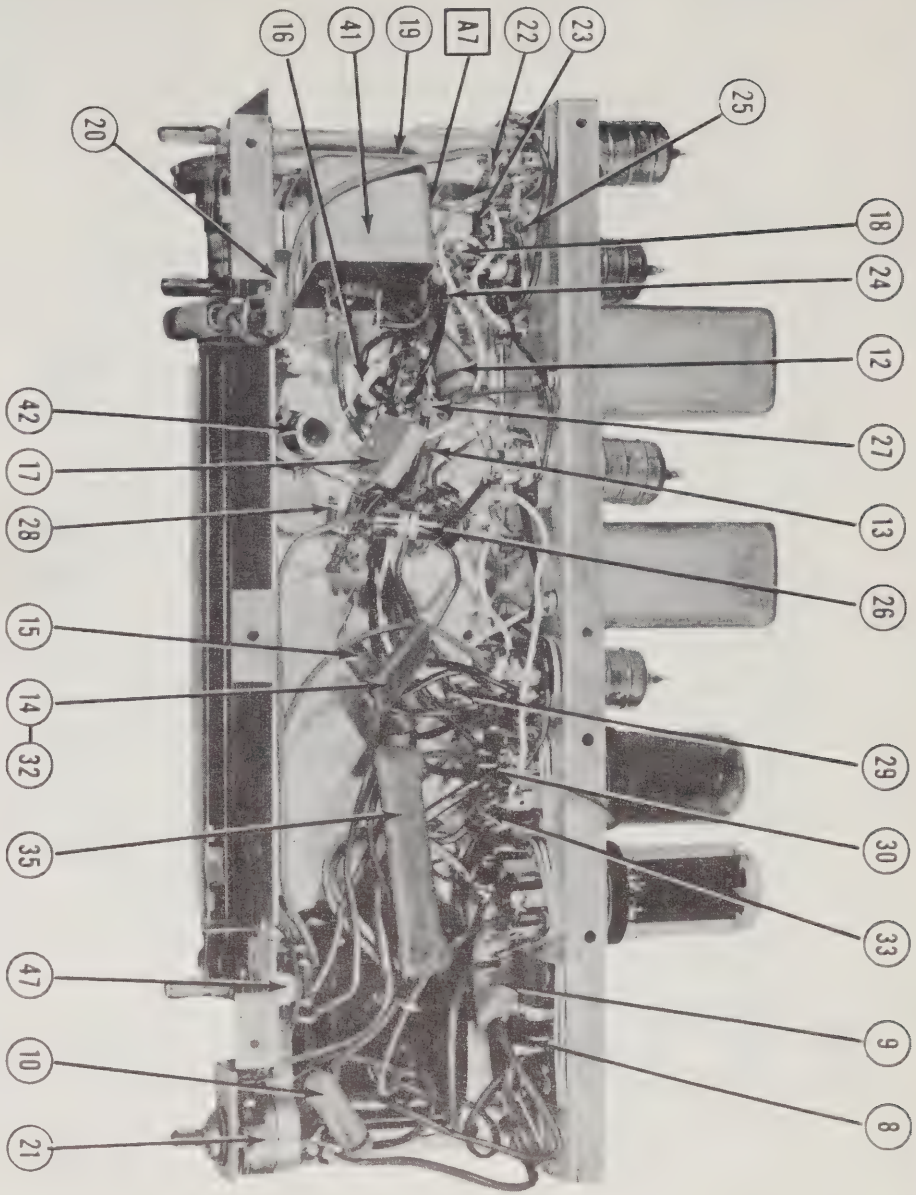
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					DELCO PART No.		
45	Bayonet	6-8	0.2	White	51		Type #51
46	"	"	"	"	"		" "

MISCELLANEOUS

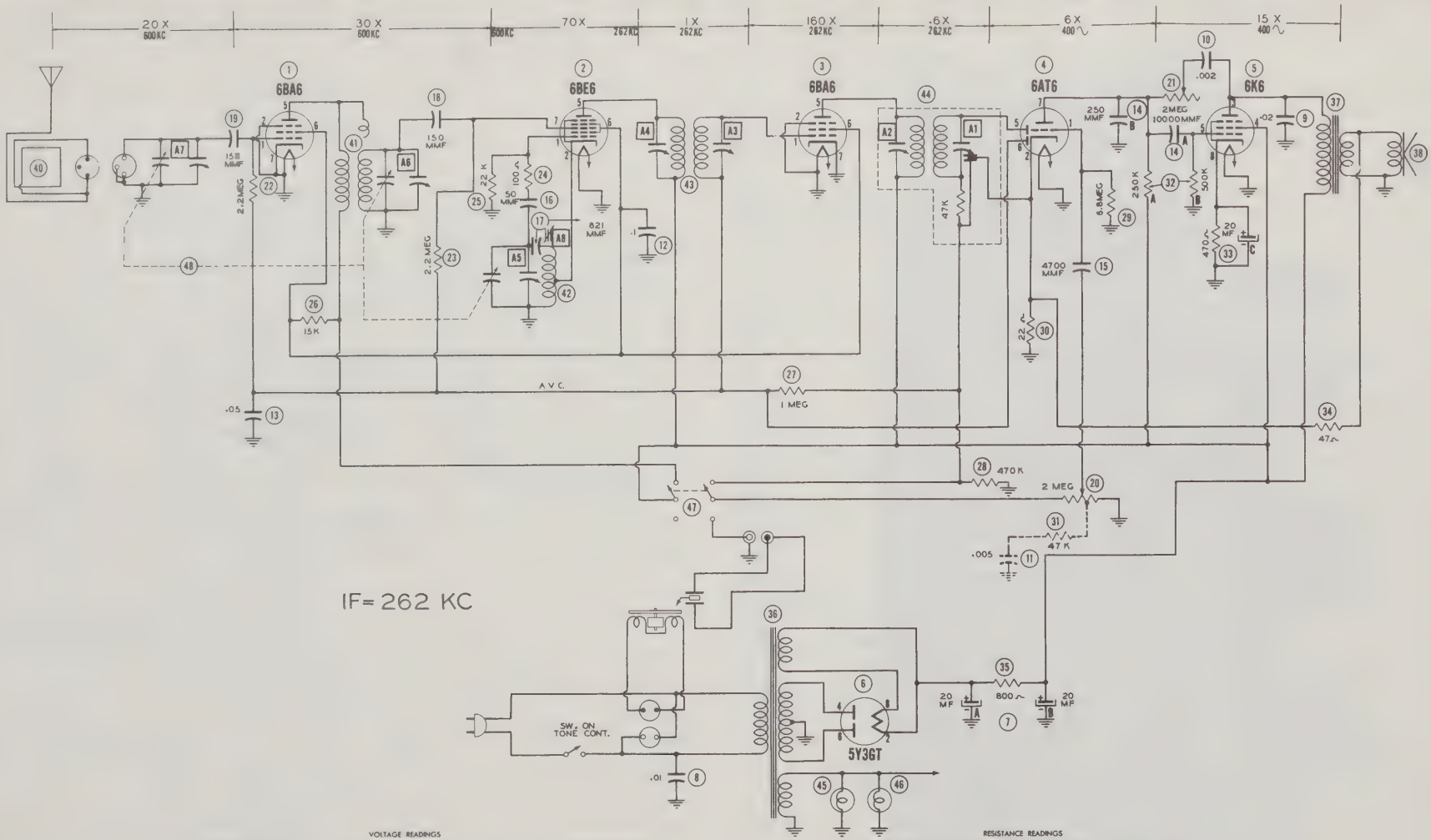
ITEM No.	PART NAME	DELCO PART No.	NOTES
47	Switch	1218062	Radio-Phono
48	3 Gang Var. Cap	1218678	(34-495MMF, 34-495MMF, 41-502MMF)
	Dial Pointer	1218065	
	Dial	1218131	



CHASSIS—BOTTOM VIEW



DELCO MODEL R-1244



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	-.9VDC	0V.	0V.	6.5VAC	245VDC	70VDC	0V.	-
2	6BE6	-5.6VDC§	0V.	0V.	6.5VAC	245VDC	70VDC	-.2VDC	-
3	6BA6	-.7VDC	0V.	0V.	6.5VAC	245VDC	70VDC	0V.	-
4	6AT6	0V.	0V.	0V.	6.5VAC	-.1VDC	-.7VDC	70VDC	-
5	6K6GT	0V.	0V.	235VDC	245VDC	0V.	0V.	6.5VAC	15VDC
6	5Y3GT	0V.	290VDC	0V.	280VAC	0V.	280VAC	0V.	290VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	3.7 Meg.	0Ω	0Ω	.1Ω	100KΩ	120KΩ	0Ω	-
2	6BE6	22KΩ	1Ω	0Ω	.1Ω	100KΩ	120KΩ	3.7 Meg.	-
3	6BA6	1.5 Meg.	0Ω	0Ω	.1Ω	100KΩ	120KΩ	0Ω	-
4	6AT6	6.8 Meg.	1Ω	0Ω	.1Ω	520KΩ	1.5 Meg.	350KΩ	-
5	6K6GT	INF.	0Ω	100Ω	100KΩ	500KΩ	INF.	.1Ω	470Ω
6	5Y3GT	INF.	100Ω	INF.	170Ω	INF.	165Ω	INF.	100KΩ

RADIO-PHONO SWITCH IN RADIO POSITION

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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4822-6

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DEWALD MODEL
B-403

DEWALD MODEL
B-403

DEWALD MODEL B-403

TRADE NAME	Dewald, Model B-403
MANUFACTURER	Dewald Radio Mfg. Corp., 35-28 49th St., Long Island City, N.Y.
TYPE SET	AC Operated TRF Receiver with Electric Clock
TUBES (FOUR)	Types, 12BA6 RF Amp., 12AT6 Det.-AF Amp., 50B5 Power Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	535-1700KC RATING .25 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer turn tuning cap. fully closed and set pointer 1-3/16" from left edge of dial backplate. This is the calibration mark referred to below.

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	75MMFD	High side to junction of cap. (11) and ant. hank. Low side to chassis.	1500KC	4-1/8" from calibration mark	Across voice coil	A1,A2	Adjust for maximum output.

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DATE 12/48-#4822-7 SET #52-FOLDER #7

PARTS LIST AND DESCRIPTIONS

DEWALD MODEL B-403

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: DEWALD PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12BA6	12BA6	7BK	
2	Det.-AF Amp.	12AT6	12AT6	7BT	
3	Power Output	50B5	50B5	7BZ	
4	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DEWALD PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	20	150		PRSA150/20-20	EDL-2215	DSB-2x20-150	TA-220	Filter-Red
B	20	150						" "
6	.1	400		484-.1	GT4P1	ST-4-1	TC-1	Line Filter
7	.02	600		684-02	GT6S2	ST-6-02	TC-12	Output Plate Bypass
8	.0032	600		684-004	GT6D4	ST-6-004	TC-24	Audio Coupling
9	.005	600		684-005	GT6D5	ST-6-005	TC-25	Grid Leak Cap.
10	.5	200		484-.5	GT2P5	ST-2-5	68P25	RF Cathode Bypass
11	.0032	600		684-004	GT6D4	ST-6-004	TC-24	Ext. Ant. Coupling
12	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	AF Plate Bypass

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DEWALD PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
13A	50KΩ	½	3016-2	D14-123*		Volume Control
H	Shaft		Not Req.	A		Attach to 13A per instructions
C	Switch		" "	41		" " " " "

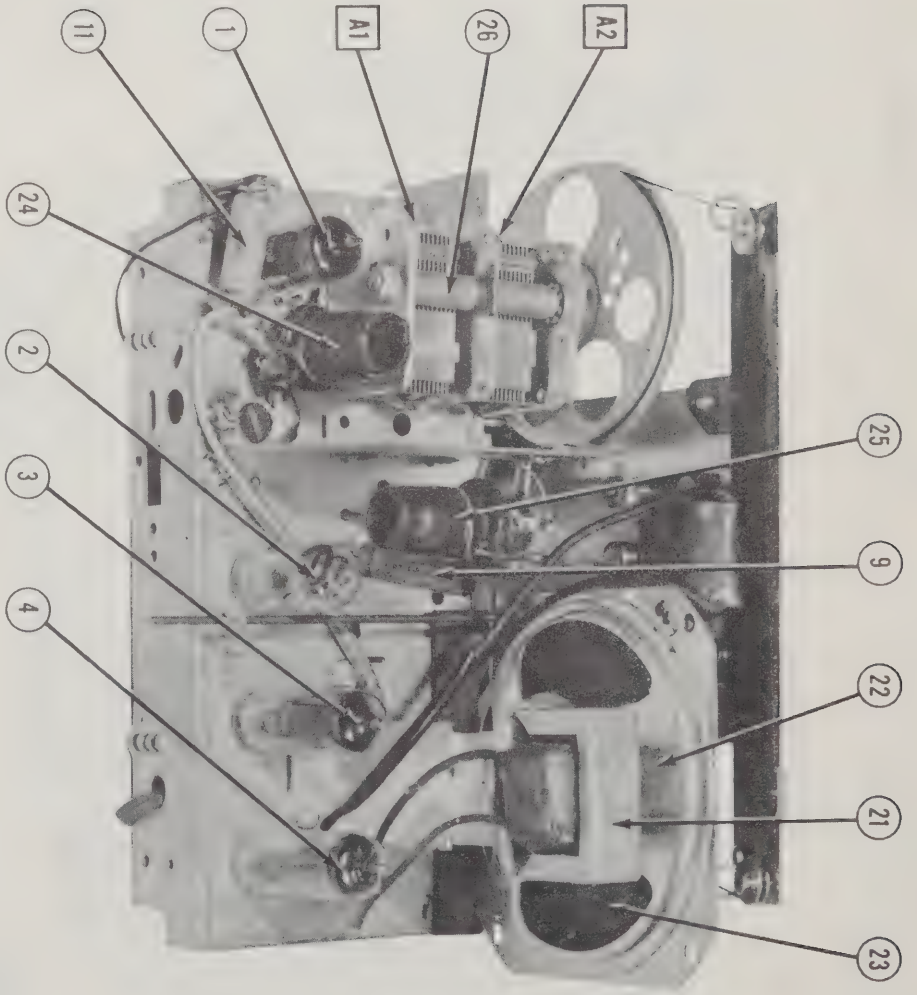
*Some models may have 220Ω fixed stop. On models with fixed stop install a 220Ω fixed resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control. (Controls viewed from shaft side, terminals down).

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DEWALD PART No.	IRC PART No.	IDENTIFICATION CODES
14	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue Detector Grid
15	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Detector Plate Load
16	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
17	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
18	3300Ω	½		BTS-3300	Or.-Or.-Red Filter-See Note 1
19	75Ω	3		AB-75	Line Dropping
20	220Ω	½		BW-½-220	Red-Red-Br. RF Cathode-See Note 2

Note 1-Some models use 2700Ω resistor in this application IRC replacement BTS-2700.
Note 2-Not used in all models (See controls section).

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		DEWALD PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
21	2000Ω	3.3Ω	180Ω	.5Ω	M-2132-1	A-3876#	T22S45#	A-2928#	#Bend mounting tabs down, file out slots and mount on original brackets.

SPEAKER

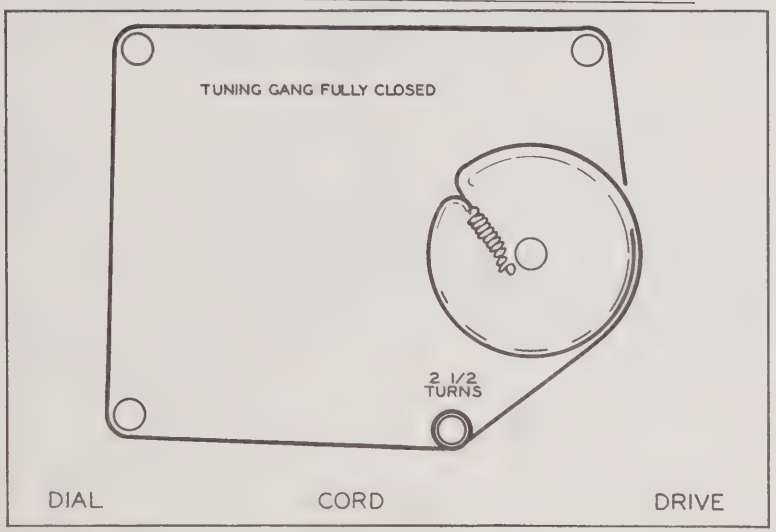
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			DEWALD PART No.	JENSEN PART No.	QUAM PART No.	
22	FIELD	VC IMP.	7014-1	ST-113† Mod. P4-X	4A07†	†Fabricate new mounting bracket.
	PM	3.3Ω				
23	CONE DIA. 4"	VC DIA. 9/16"				

R F COILS

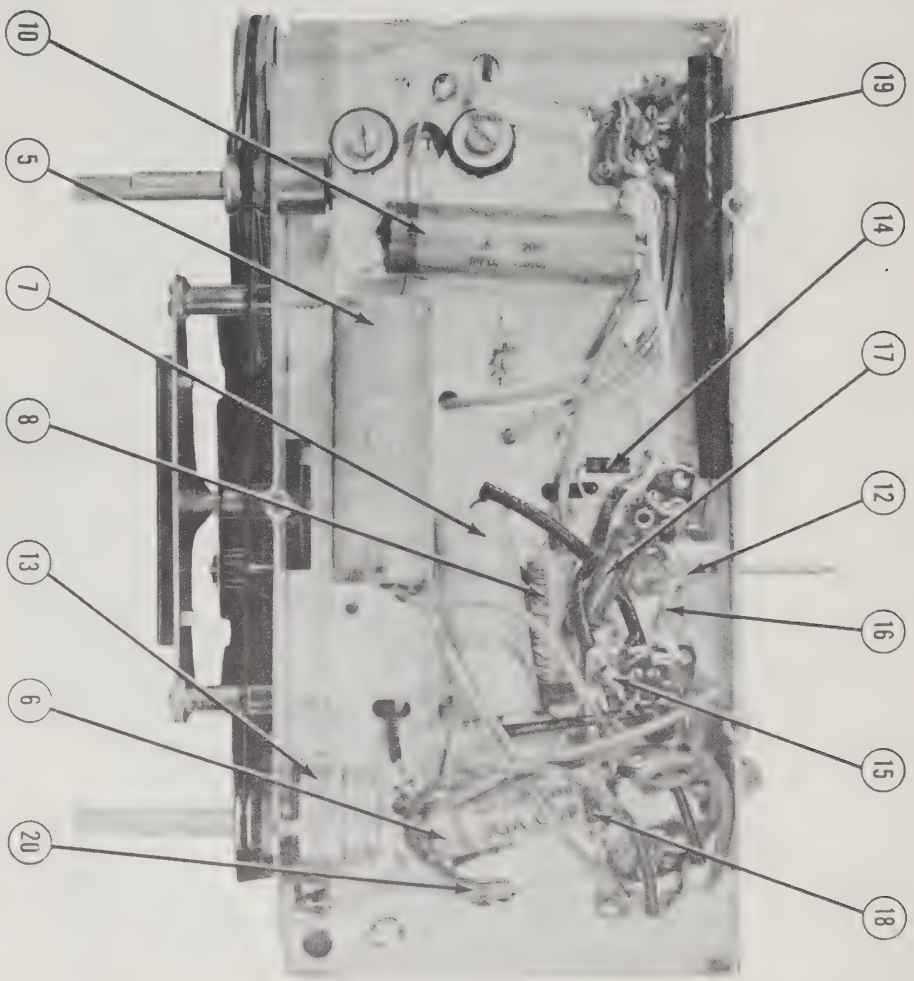
ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	DEWALD PART No.	MEISSNER PART No.
24	Ant. Coil	42Ω	5Ω		14-1056
25	RF Coil	7Ω	5.5Ω		14-1057

MISCELLANEOUS

ITEM No.	PART NAME	DEWALD PART No.	NOTES
26	2 Gang Var. Cap.		(15-441MMF, 23-467MMF)



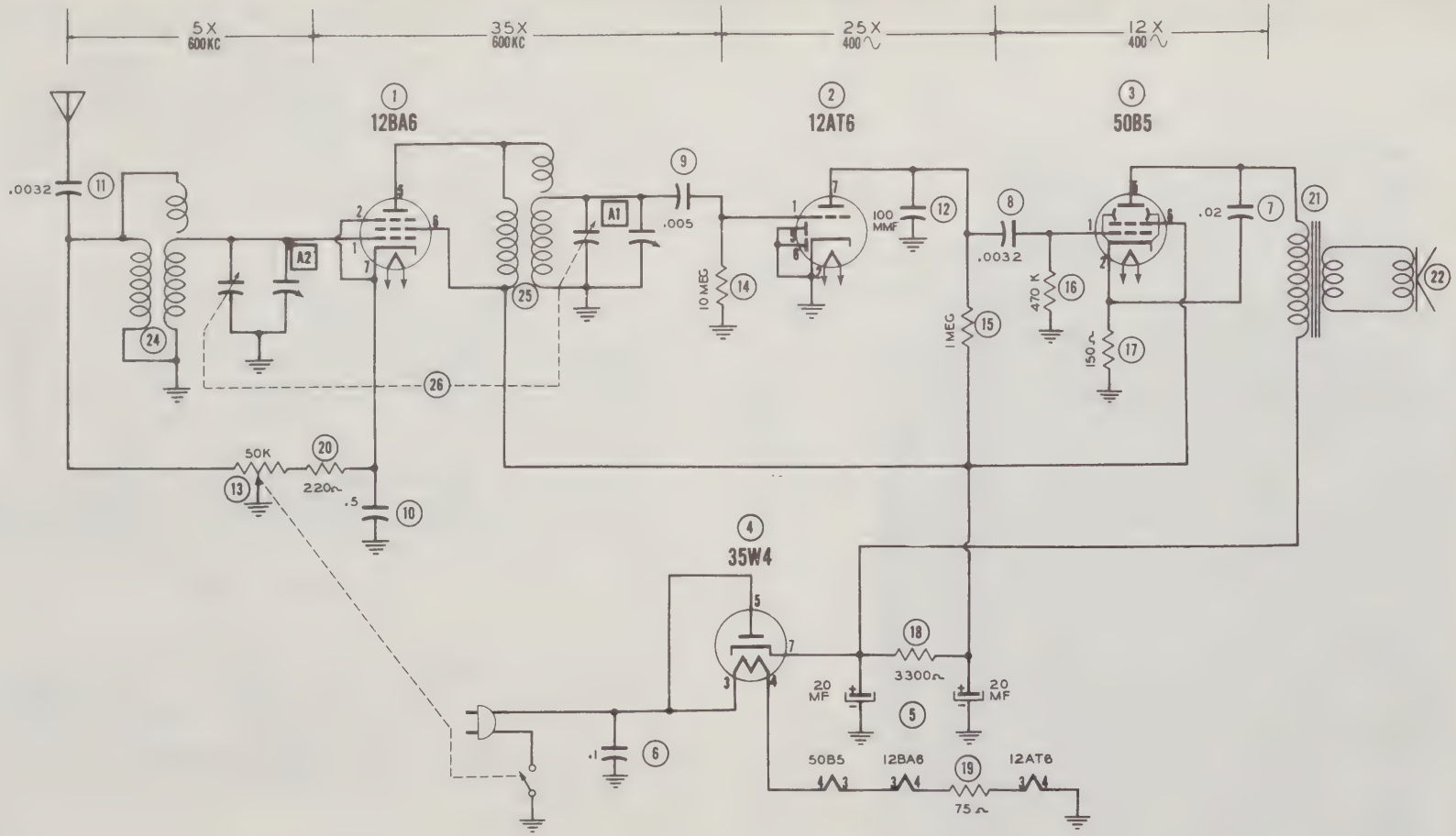
CHASSIS—BOTTOM VIEW



DATE 12/48-#4822-7 SET #S2-FOLDER #7

DEWALD MODEL P-403

DEWALD MODEL B-403



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BA6	0V.	2VDC	37VAC	23VAC	95VDC	95VDC	2VDC
2	12AT6	-.3VDC	0V.	13VAC	0V.	0V.	0V.	31VDC
3	50B5	0V.	5.8VDC	37VAC	85VAC	125VDC	95VDC	0V.
4	35W4	2VDC	0V.	85VAC	117VAC	117VAC	110VAC	133VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BA6	5Ω	220Ω	85Ω	75Ω	200KΩ	200KΩ	220Ω
2	12AT6	10 Meg.	0Ω	13Ω	0Ω	0Ω	0Ω	1.2 Meg.
3	50B5	470KΩ	150Ω	85Ω	115Ω	200KΩ	200KΩ	470KΩ
4	35W4	220Ω	INF.	115Ω	140Ω	140Ω	130Ω	200KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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4822-7

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

FIRESTONE MODEL 4-A-41
(Code #291-7-576)

FIRESTONE MODEL 4-A-41
(Code #291-7-576)

FIRESTONE MODEL 4-A-41

TRADE NAME	Firestone Model 4-A-41 (Code #291-7-576)
SUPPLIER	Firestone Tire & Rubber Co., Akron, Ohio
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	530-1730KC RATING .22 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.02 MFD	High side to large stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2	250MMFD	High side to ext. ant. lead. Low side to external ground lead.	1730KC	"	"	A5	Adjust for maximum output.
3	250MMFD	"	1400KC	Tune for maximum output.	"	A6	" " " "

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	2nd Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FIRESTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	50	150	25E16		UP5515	DY-2x50-150	EL-25	▲ Filter
B	50	150						■ "
7	.05	400	23E416	484-05	GT4S5	ST-4-05	TC-15	Line Filter
8	.2	400		484-.2 *	GT4P2*	ST-4-2*	72P3	Line Isolation ‡
9	.03	400	23E414	484-03	GT4S3	ST-4-03	TC-13	Output Plate Bypass
10	.01	400		484-01	GT4S1	ST-4-01	TC-11	Audio Coupling
11	.01	400		484-01	GT4S1	ST-4-01	TC-11	" "
12	.1	400	23E418	484-.1	GT4P1	ST-4-1	TC-1	AVC Filter
13	100	500	23E39	1468-0001	5W5T1	MO.5-31	1FM-31	AF Plate Bypass
14	100	500	23E39	1468-0001	5W5T1	MO.5-31	1FM-31	Diode RF Filter
15	100	500	23E39	1468-0001	5W5T1	MO.5-31	1FM-31	" " "
16	100	500	23E39	1468-0001	5W5T1	MO.5-31	1FM-31	Osc. Grid Cap.

*Wind same number of turns around replacement as were around original part.
‡In some models this capacitor may have 8 turns of wire wound around it, obtainable under manufacturers Part #20E75.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FIRESTONE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17A	500KΩ	‡	28E1	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	E#	KSS-3#	Attach to 17A per instructions
C	Switch		" "	41	SW-A	" " " " "

#Wrap scotch tape around shaft adjacent to lock ring for dial cord surface.

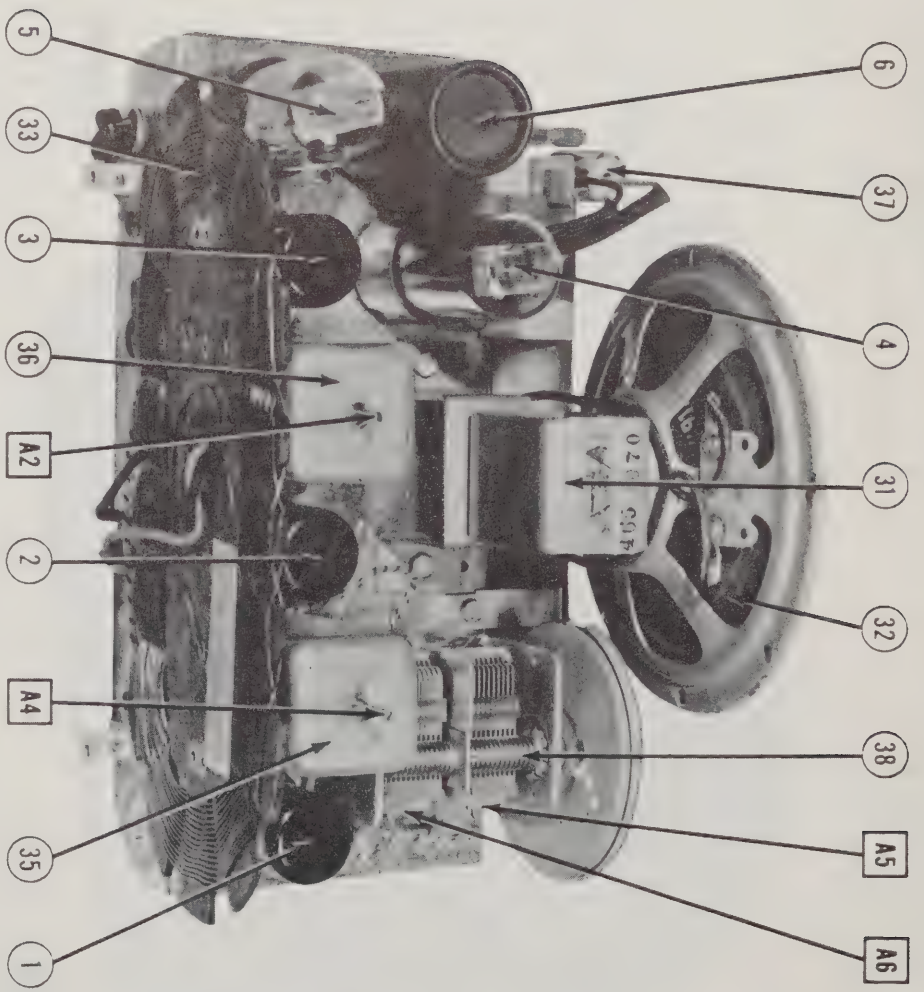
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FIRESTONE PART No.	IRC PART No.	IDENTIFICATION CODES
18	22KΩ	‡	27E223	BTS-22K	Red-Red-Or. Oscillator Grid
19	10 Meg.	‡	27E106	BTS-10 Meg.	Br.-Blk.-Blue AVC Network
20	3.3 Meg.	‡	27E335	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
21	68KΩ	‡	27E683	BTS-68K	Blue-Gray-Or. Diode Filter
22	3.3 Meg.	‡	27E335	BTS-3.3 Meg.	Or.-Or.-Grn. AF Grid
23	220KΩ	‡	27E224	BTS-220K	Red-Red-Yl. AF Plate Load
24	470KΩ	‡	27E474	BTS-470K	Yl.-Vi.-Yl. Output Grid
25	150Ω	‡	27E151	BW-‡-150	Br.-Grn.-Br. Output Cathode
26	2200Ω	1	27E222-3	BTA-2200	Red-Red-Red Filter
27	47Ω	‡	27E470-2	BW-‡-47	Yl.-Vi.-Blk. Surge Limiter
28	100Ω	‡	27E101	BW-‡-100	Br.-Blk.-Br. Dial Light Shunt
29	220KΩ	‡	27E224	BTS-220K	Red-Red-Yl. Line Isolation

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: FIRESTONE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
30	4600Ω	3.5Ω	237Ω	.5Ω	22E2	A-3877	T22S46	A-2930	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA FIRESTONE PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	VC IMP.		ST-107†		†Fabricate new mounting bracket.
31	PM	3.5Ω	1E9	Mod. P5-V	5A15†	
	CONE DIA.	VC DIA.				
32	4-13/16"	9/16"				

R F COILS

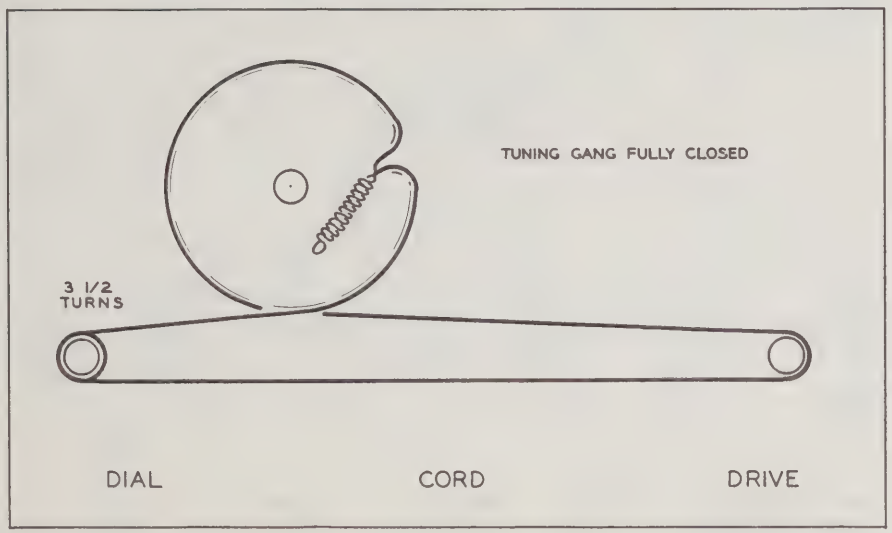
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA FIRESTONE PART No.	MEISSNER PART No.	
33	Loop Ant.	0Ω	1Ω	20E24		
34	Osc. Coil	.8Ω	8.5Ω	20E162	14-1060	
35	Input IF	11.5Ω	12Ω	20E21**	16-5740	**Alternate Firestone Part #20E261.
36	Output IF	11Ω	9.5Ω	20E22**	16-5742	**Alternate Firestone Part #20E261-2.

DIAL LIGHT

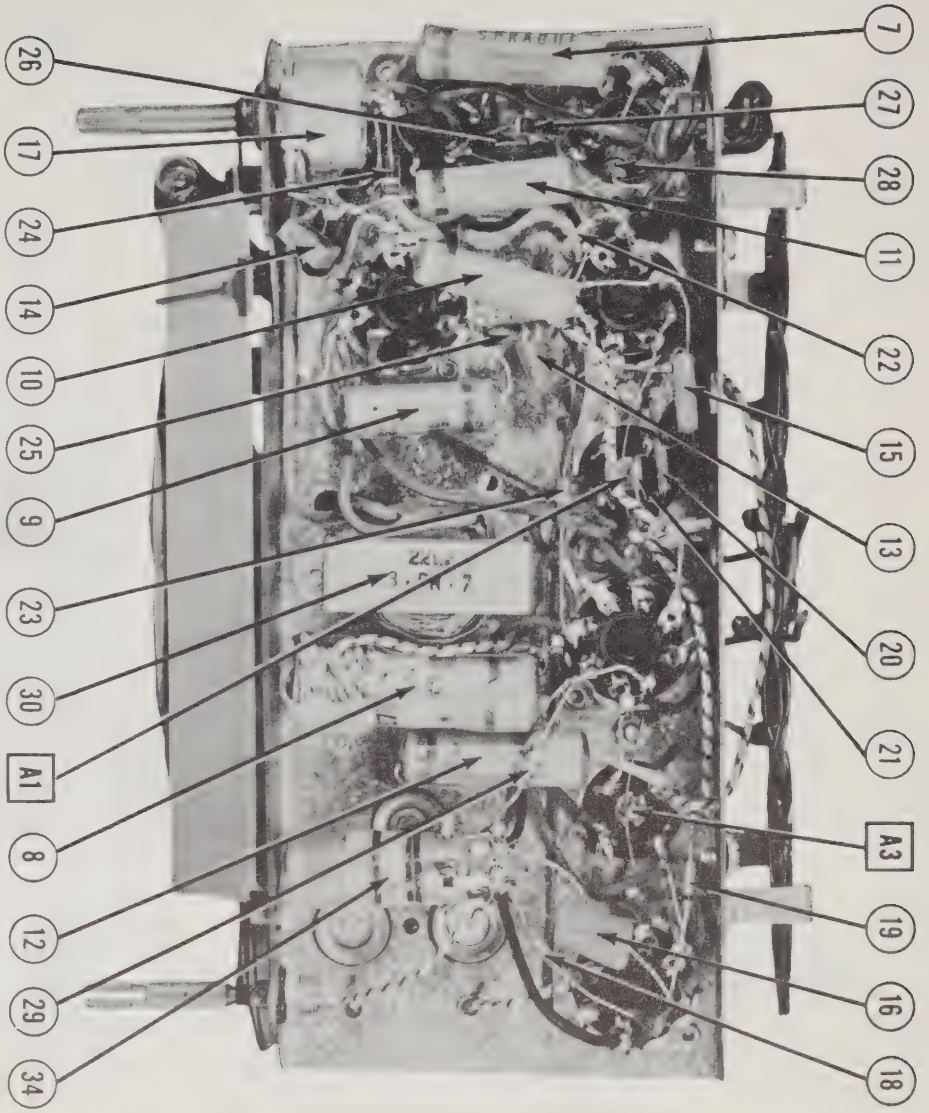
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA FIRESTONE PART No.		INSTALLATION NOTES
37	Bayonet	6-8	0.15	Brown	40E1		Type #47

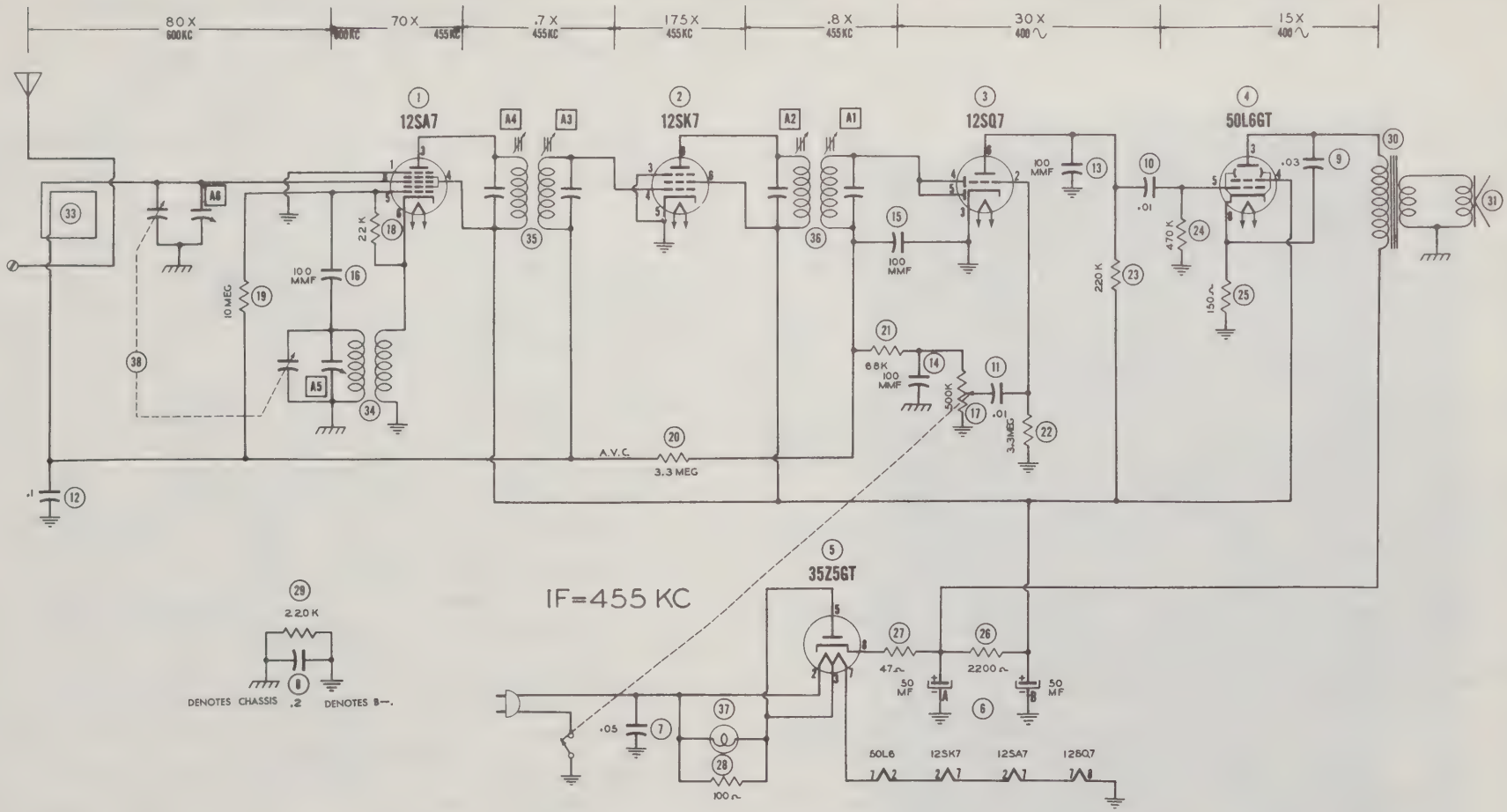
MISCELLANEOUS

ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
38A	2 Gang Var. Cap.	24E2	(17-442MMF, 30-193MMF) (3 Hole Mtg.)
B	" " " "	24E18	Alternate (2 Hole Mtg.)
	Cabinet	7E76-2	Ivory
	Dial Scale	36E23	
	Dial Pointer	35E8	
	Knob	37E27-19	



CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0V.	26VAC	80VDC	80VDC	-7.2VDC§	0V.	12VAC	-.2VDC
2	12SK7	0V.	40VAC	0V.	-.2VDC	0V.	80VDC	26VAC	80VDC
3	12SQ7	0V.	-.6VDC	0V.	-.5VDC	-.5VDC	46VDC	12VAC	0V.
4	50L6GT	0V.	40VAC	112VDC	80VDC	0V.	0V.	90VAC	5.7VDC
5	35Z5GT	0V.	117VAC	115VAC	0V.	115VAC	0V.	90VAC	120VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	220KΩ	26Ω	60KΩ	60KΩ	22KΩ	.8Ω	12Ω	3.5 Meg.
2	12SK7	220KΩ	40Ω	0Ω	3.5 Meg.	0Ω	60KΩ	26Ω	60KΩ
3	12SQ7	0Ω	3.3 Meg.	0Ω	600KΩ	600KΩ	230KΩ	12Ω	0Ω
4	50L6GT	INF.	40Ω	60KΩ	60KΩ	470KΩ	INF.	90Ω	150Ω
5	35Z5GT	INF.	120Ω	115Ω	INF.	115Ω	INF.	90Ω	60KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

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4822-8

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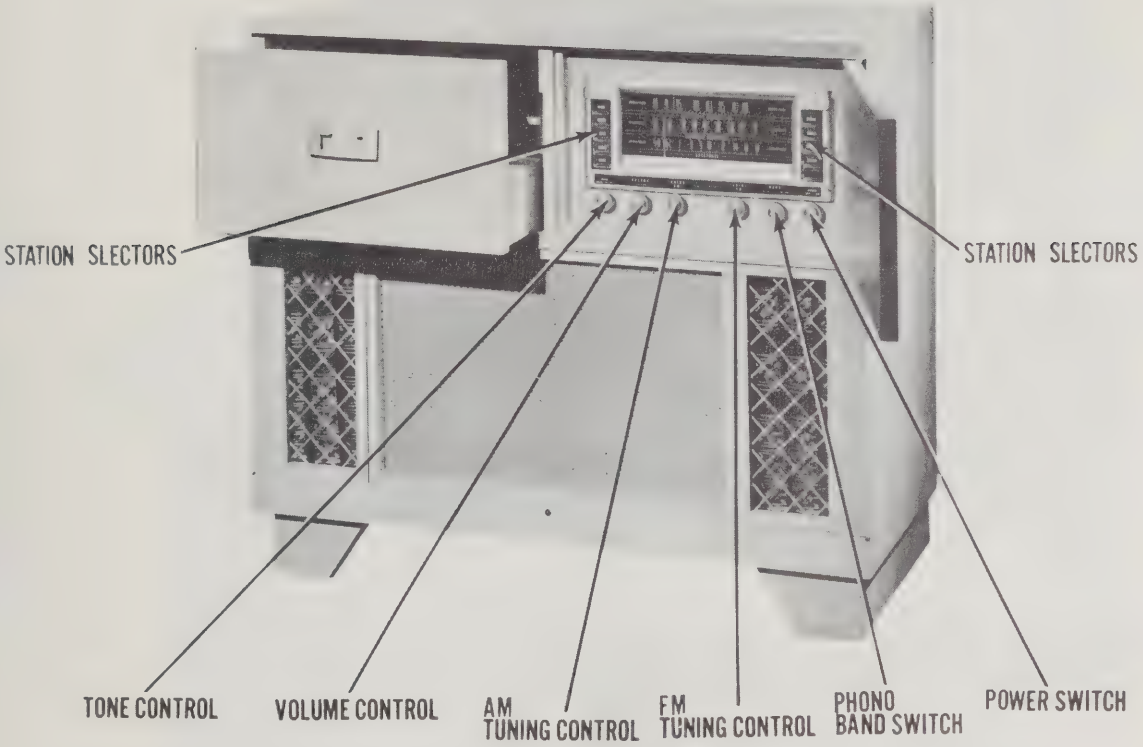
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

HALLICRAFTERS MODELS
400, 406, 409, 410, 411, 412



HALLICRAFTERS MODELS
400, 406, 409, 410, 411, 412

TRADE NAME	Hallicrafters, Models 400, 406, 409, 410, 411, 412
SUPPLIER	Hallicrafters Co., 5th & Kostner Avenues, Chicago 24, Ill.
TYPE SET	AC Operated FM-2 Band AM Superheterodyne Receiver with Loop Antenna
TUBES (TWELVE)	Types, 6BA6 RF Amp., 6AU6 Mixer, 6J6 Osc.-AFC, 6SG7 1st IF Amp., 6SG7 2nd IF Amp., 6SH7 FM Limiter-AM Det., 6AL5 FM Ratio Det., 6SQ7 AF Amp., 6SQ7 Phase Inv., (2) 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	105-125 Volts AC
RATING	.96 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	550-1700KC SHORT WAVE 5.8-18MC FREQ. MOD. 88-108MC

PUSHBUTTON ADJUSTMENTS

1. Make up list of stations desired to be set up.
2. Turn receiver on and allow to warm up for at least fifteen minutes.
3. Insulate muting switches by inserting paper strip between contacts.
4. Remove transparent section of button and insert screwdriver thru large hole of button.
5. Loosen locking screw not more than one turn.
6. Depress pushbutton and manually tune in station desired to be set up, then tighten locking screw.
7. Insert call letter tab of station between transparent section of button and metal insert and replace insert in button. This station is now set up.
8. Repeat the above procedure for the remaining buttons to be set up.

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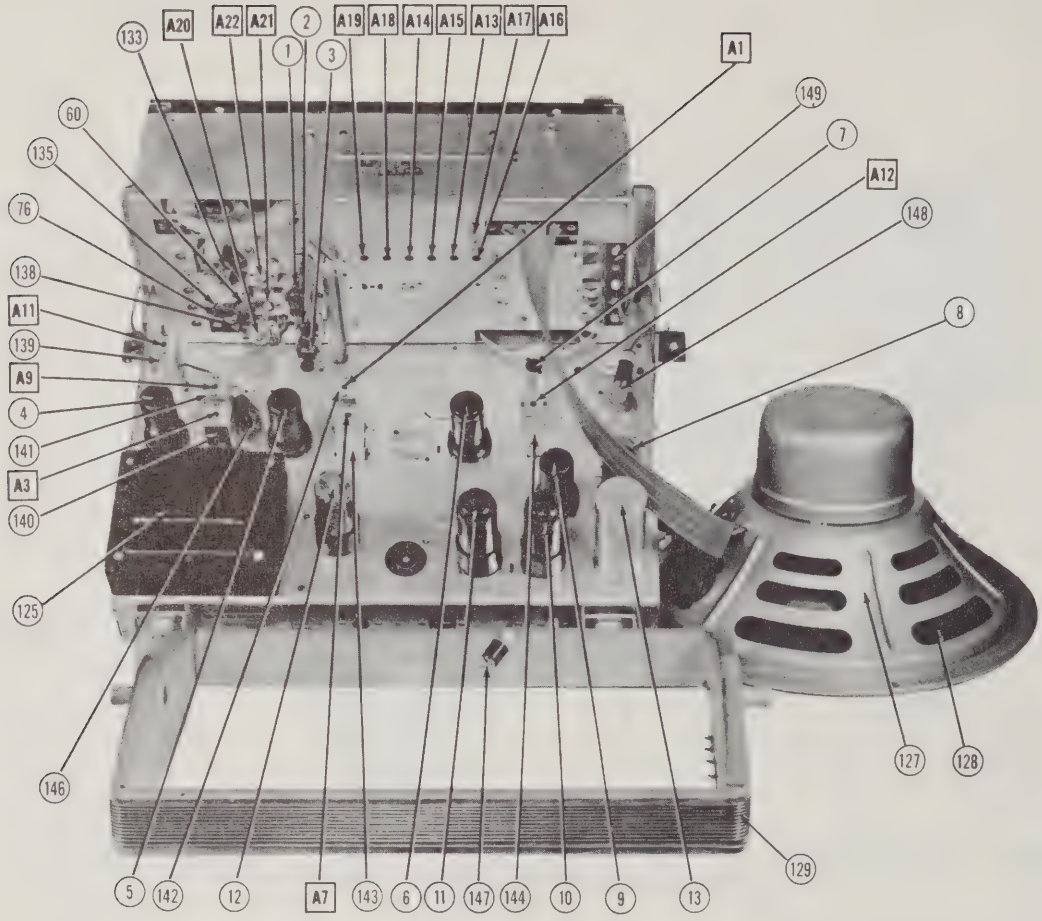
DATE 12/48-#4822-9 SET #52-FOLDER #9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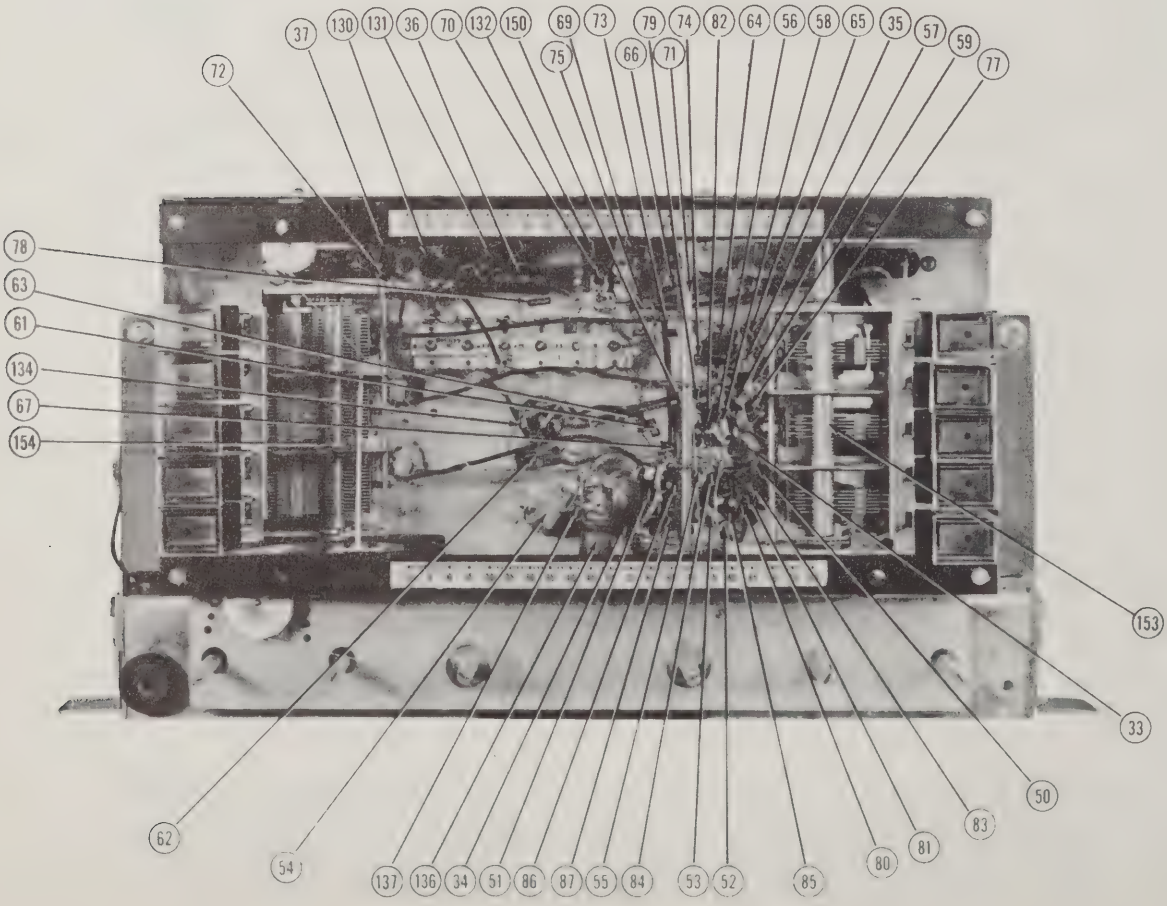
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: HALLICRAFTERS PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6BA6	6BA6	7BK	
2	Mixer	6AU6	6AU6	7BK	
3	Osc.-AFC	6J6	6J6	7BF	
4	1st IF Amp.	6SG7	6SG7	8BK	
5	2nd IF Amp.	6SG7	6SG7	8BK	
6	FM Limiter-AM-Det.	6SH7	6SH7	8BK	
7	FM Ratio Det.	6AL5	6AL5	6BT	
8	AF Amp.	6SQ7	6SQ7	8Q	
9	Phase Inv.	6SQ7	6SQ7	8Q	
10	Power Output	6V6GT	6V6GT	7AC	
11	" "	6V6GT	6V6GT	7AC	
12	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HALLICRAFTERS PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
13A	60	450	45B113	AF4444J*	UP222245*	DY-4x20-450*	EL-420*	◓ Filter
B	20	450						■ "
C	20	400		PRS450/20	BR2045	M-20-450	UT-20	▲ "
14	10	25	45A121	PRS25/10	BR102A	M-10-25	TA-10	Cathode Bypass
15	.01	600	46AZ103J	684-01	DT6S1	MPH-6-01	TC-11	Line Filter
16	.01	600	46AZ103F	684-01	DT6S1	ST-6-01	TC-11	Audio Coupling
17	.01	600	46AZ103F	684-01	DT6S1	ST-6-01	TC-11	" "
18	.05	200	46AU506J	484-05	DT2S5	ST-4-05	TC-15	Feedback
19	.003	600	46AZ302J	684-003	DT6D3	ST-6-003	TC-23	Audio Coupling
20	.003	600	46AZ302J	684-003	DT6D3	ST-6-003	TC-23	Tone Comp.
21	.05	600	46AY503F	684-05	DT6S5	ST-6-05	TC-15	FM Diode Load Cap.
22	.05	600	46AY503F	684-05	DT6S5	ST-6-05	TC-15	" " " "
23	.05	600	46AY503F	684-05	DT6S5	ST-6-05	TC-15	Limiter Decoupling
24	.01	600	46AZ103F	684-01	DT6S1	ST-6-01	TC-11	" "
25	.01	600	46AZ103F	684-01	DT6S1	ST-6-01	TC-11	2nd IF Plate Decoup.
26	.01	600	46AZ103F	684-01	DT6S1	ST-6-01	TC-11	2nd IF Screen Bypass
27	.01	600	46AZ103F	684-01	DT6S1	ST-6-01	TC-11	2nd IF Cathode Bypass
28	.01	600	46AZ103F	684-01	DT6S1	ST-6-01	TC-11	1st IF Plate Decoupling
29	.01	600	46AZ103F	684-01	DT6S1	ST-6-01	TC-11	1st IF Screen Bypass
30	.01	600	46AZ103F	684-01	DT6S1	ST-6-01	TC-11	RF Bypass Power Supply
31	.01	600	46AZ103F	684-01	DT6S1	ST-6-01	TC-11	AVC Filter
32	.01	600	46AZ103F	684-01	DT6S1	ST-6-01	TC-11	" "
33	.01	600	46AZ103F	684-01	DT6S1	ST-6-01	TC-11	Mixer Plate Decoupling
34	.02	600	46AY203F	684-02	DT6S2	ST-6-02	TC-12	AVC Filter
35	.01	600	46AZ103F	684-01	DT6S1	ST-6-01	TC-11	Decoupling
36	.05	600	46AY503F	684-05	DT6S5	ST-6-05	TC-15	Mixer Grid Filter
37	.02	600	46AY203F	684-02	DT6S2	ST-6-02	TC-12	AVC Filter
38	.01	600	46AZ103F	684-01	DT6S1	ST-6-01	TC-11	Fil. Bypass
39	.01	600	46AZ103F	684-01	DT6S1	ST-6-01	TC-11	" "
40	150	500	CM20A151M	1468-00015	5W5T15	MO.5-315	1FM-315	Output Grid Bypass
41	150	500	CM20A151M	1468-00015	5W5T15	MO.5-315	1FM-315	Tone Comp.-See Note 1
42	47	500	CM20A470M	1468-00005	5W5Q5	MO.5-45	1FM-45	" "
43	500	300	47A147	1468-0005	5W5T5	MO.5-35	1FM-35	" " -Cer.
44	470	300	CM20A471K	1468-0005	5W5T5	MO.5-35	1FM-35	Phono Coupling
45	1000	300	47A148	1468-001	1W5D1	MW.5-21	1FM-21	De-emphasis-Cer.
46	150	500	CM20A151M	1468-00015	5W5T15	MO.5-315	1FM-315	RF Bypass
47	1000	300	47A148	1468-001	1W5D1	MW.5-21	1FM-21	" " -Cer.
48	47	500	CM20A470M	1468-00005	5W5Q5	MO.5-45	1FM-45	IF Coupling
49	150	500	CM20A151M	1468-00015	5W5T15	MO.5-315	1FM-315	" "
50	8000	300	47B32103N1					Osc. Cathode Byp.-Cer.
51	100	500	CM20A101M	1468-0001	5W5T1	MO.5-31	1FM-31	RF Bypass
52	100	300	47A045	1468-0001	5W5T1	MO.5-31	1FM-31	Osc. Feedback-Cer.
53	1000	300	47A148	1468-001	1W5D1	MW.5-21	1FM-21	" " "
54	3900	300	CM35A392J					Fixed Padder
55	47	300	47A150	1468-00005	5W5Q5	MO.5-45	1FM-45	Osc. Grid Cap.-Cer.
56	10	300	47A149	1468-00001	5W5Q1	MO.5-41	MS-41	Mixer Plate Byp.-Cer.
57	5000	300	47A168	1467-005	1D5D5	MW.5-25	1FM-25	Mixer Screen Bypass-Cer.
58	3.3	300	47A160-5					Osc. Feedback-Cer.
59	100	300	47A045	1468-0001	5W5T1	MO.5-31	1FM-31	RF Coupling-Cer.
60	47	500	CM20A470M	1468-00005	5W5Q5	MO.5-45	1FM-45	RF Bypass
61	4.7	300	47A160-6					Osc. Feedback-Cer.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HALLICRAFTERS PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
112	4700Ω	½	RC20AE472K	BTS-4700	Yl.-Vi.-Red Feedback
113	470KΩ	½	RC20AE474M	BTS-470K	Yl.-Vi.-Yl.-1st AF Plate Load
114	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl. Phase Inv. Grid
115	3900Ω	½	RC20AE392K	BTS-3900	Or.-White-Red Phase Inv. Cathode
116	220KΩ	½	RC20AE224M	BTS-220K	Red-Red-Yl. Phase Inv. Plate Load
117	330KΩ	½	RC20AE334K	BTS-330K	Or.-Or.-Yl. Output Grid
118	470KΩ	½	RC20AE474M	BTS-470K	Yl.-Vi.-Yl. " "
119	330Ω	2	RC40AE331M	BW-2-330	Or.-Or.-Br. Output Cathode
120	1200Ω	2	24BV122E	BT-2-1200	Br.-Red-Red Filter
121	1200Ω	2	24BV122E	BT-2-1200	Br.-Red-Red "
122	1000Ω	2	24BV102E	BT-2-1000	Br.-Blk.-Red "
123	1000Ω	2	24BV102E	BT-2-1000	Br.-Blk.-Red "
124	6.8Ω	1	RC30AE068K	BW-1-6.8	Blue-Gray-Blk. Filament Dropping-See Note

Note-Some models use two 12Ω resistors in parallel in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: HALLICRAFTERS PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No.
125	117V AC @ .96A	630V CT @ .133A DC	5.2V AC @ 2.0A	6.6V AC @ 4.15A	52C153	P-6314#	T-22R07#	P-2955#

#Add series resistor to reduce plate voltage.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: HALLICRAFTER PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
126	10KΩ CT	3.5Ω	560Ω CT	.3Ω	55B105	A-3870	T22S56‡	A-2936‡	‡Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: HALLICRAFTERS PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
	FIELD	VC IMP.		ST-102†		†Replace output transformer to match 6-8Ω voice coil.
127	PM	3.5Ω	85C069	Mod. P12-S	12A6†	
	CONE DIA.	VC DIA.				
128	11-3/8"	1"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: HALLICRAFTERS PART No.	REPLACEMENT DATA: MEISSNER PART No.
129	Loop Ant.	.1Ω	.3Ω	57C114 57C116	
130	Loop Load. Coil		5Ω	51B907	
131	Ant. Load. Coil		6.7Ω	51B994	
132	Ant.Coil SW	.1Ω	.3Ω	51B993	
133	Ant. Coil FM		0Ω	51B916	
134	BC RF Coil	6.7Ω	20.7Ω	51B910	
135	FM " "		0Ω	51B915	
136	BC Osc.Coil		4.8Ω	51B911	
137	SW " "		.3Ω	51B908	
138	FM " "		0Ω	51B914	
139A	AM 1st IF		7Ω	50C298	
B	FM " "		.7Ω		
140	AM 2nd IF	8.8Ω	8.8Ω	50C236	
141	FM " "	.7Ω	.7Ω	50C237	
142	AM 3rd IF	8.8Ω	8.8Ω	50C235	
143	FM " "	.7Ω	.7Ω	50C237	
144	FM Det.Tran.	.7Ω	.7Ω	50C263	
145	RF Choke Coil		.2Ω	53B009	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	HALLICRAFTERS PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	
62	470	500	CM20A471K	1468-0005	5W5T5	MO.5-35	1FM-35	Fixed Trimmer
63	2.2	300	47A160-4					Osc. Feedback-Cer.
64	5000	300	47A168	1467-005	1D5D5	MW.5-25	1FM-25	RF Screen Bypass-Cer.
65	47	300	47A150	1468-00005	5W5Q5	MO.5-45	1FM-45	RF Coupling-Cer.
66	100	500	CM20A101M	1468-0001	5W5T1	MO.5-31	1FM-31	" "
67	1000	300	47A148	1468-001	1W5D1	MW.5-21	1FM-21	Filament Bypass-Cer.
156	3.3	300	47A160-5					IF Coupling-See Note 2

*Parallel sections to obtain desired capacity.
Note 1-Not used in all models.
Note 2-This item may be inside IF transformer on some models.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	HALLICRAFTERS PART No.	IRC PART No.	CLAROSTAT PART No.	
68A	2 Meg.	½	25B022	D17-139X	AT-119	Volume Control tapped @ 200KΩ
B	Shaft		Not Req.	E	KSS-3	Attach to 68A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	HALLICRAFTERS PART No.	IRC PART No.	
69	1 Meg.	½	RC20AE105M	BTS-1 Meg.	Br.-Blk.-Grn. AFC Network
70	330KΩ	½	RC20AE334M	BTS-330K	Or.-Or.-Yl. AFC Network
71	2200Ω	½	RC20AE222M	BTS-2200	Red-Red-Red Ant. Loading
72	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl. AVC Network
73	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl. RF Grid
74	33KΩ	1	RC30AE333M	BTA-33K	Or.-Or.-Or. RF Screen
75	47Ω	½	RC20AE470M		Yl.-Vl.-Blk. Parasitic Supp.
76	10Ω	½	RC20AE100M		Br.-Blk.-Blk. " "
77	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl. Equalization
78	2.2 Meg.	½	RC20AE225M	BTS-2.2 Meg.	Red-Red-Grn. Mixer Grid
79	220KΩ	½	RC20AE224M	BTS-220K	Red-Red-Yl. Mixer Screen
80	10Ω	½	RC20AE100M		Br.-Blk.-Blk. Parasitic Supp.
81	10Ω	½	RC20AE100M		Br.-Blk.-Blk. " "
82	1000Ω	½	RC20AE102M	BTS-1000	Br.-Blk.-Red Decoupling
83	220Ω	½	RC20AE221M		Red-Red-Br. Osc. Cathode
84	22KΩ	½	RC20AE223M	BTS-22K	Red-Red-Or. Osc. Grid
85	10Ω	½	RC20AE100M		Br.-Blk.-Blk. Osc. Coupling
86	220Ω	½	RC20AE221M		Red-Red-Br. AFC Network
87	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl. " "
88	10KΩ	2	RC40AE103M	BT-2-10K	Br.-Blk.-Or. Voltage Dropping
89	10KΩ	2	RC40AE103M	BT-2-10K	Br.-Blk.-Or. " "
90	470Ω	1	RC30AE471M	BTA-470	Yl.-Vl.-Br. Decoupling
91	220KΩ	½	RC20AE224M	BTS-220K	Red-Red-Yl. 1st IF Grid
92	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl. AVC Network
93	1 Meg.	½	RC20AE105M	BTS-1 Meg.	Br.-Blk.-Grn. " "
94	47KΩ	1	RC30AE473M	BTA-47K	Yl.-Vl.-Or. 1st IF Screen
95	1000Ω	½	RC20AE102M	BTS-1000	Br.-Blk.-Red 1st IF Plate Decoup.
96	220Ω	½	RC20AE221M		Red-Red-Br. 2nd IF Cathode
97	47KΩ	1	RC30AE473M	BTA-47K	Yl.-Vl.-Or. 2nd IF Screen
98	1000Ω	½	RC20AE102M	BTS-1000	Br.-Blk.-Red 2nd IF Plate Decoup.
99	1000Ω	½	RC20AE102M	BTS-1000	Br.-Blk.-Red Limiter Decoup.
100	47KΩ	½	RC20AE473M	BTS-47K	Yl.-Vl.-Or. Diode Filter
101	47KΩ	½	RC20AE473M	BTS-47K	Yl.-Vl.-Or. Diode Filter
102	330KΩ	½	RC20AE334M	BTS-330K	Or.-Or.-Yl. Diode Load
103	47KΩ	1	RC30AE473M	BTA-47K	Yl.-Vl.-Or. Limiter Decoupling
104	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl. De-emphasis
105	470KΩ	½	RC20AE474K	BTS-470K	Yl.-Vl.-Yl. FM Diode Load
106	470KΩ	½	RC20AE474K	BTS-470K	Yl.-Vl.-Yl. " " "
107	150KΩ	½	RC20AE154M	BTS-150K	Br.-Grn.-Yl. Tone Comp.
108	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl. " "
109	300Ω	½	RC20AE301J	BW-½-300	Or.-Blk.-Br. 1st AF Cathode
110	68KΩ	2	RC40AE683K	BT-2-68K	Blue-Gray-Or. Cathode Dropping
111	330KΩ	½	RC20AE334M	BTS-330K	Or.-Or.-Yl. Phono Shunt

DATE 12/48-#4822-9 SET #52-FOLDER #9

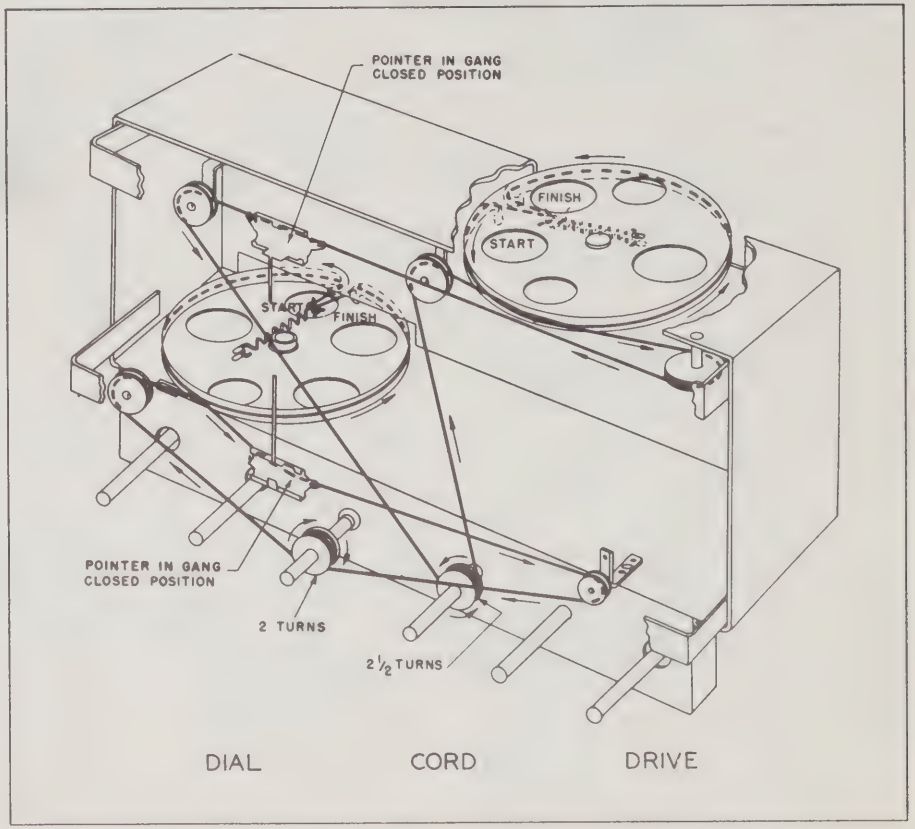
PARTS LIST AND DESCRIPTIONS (Continued)

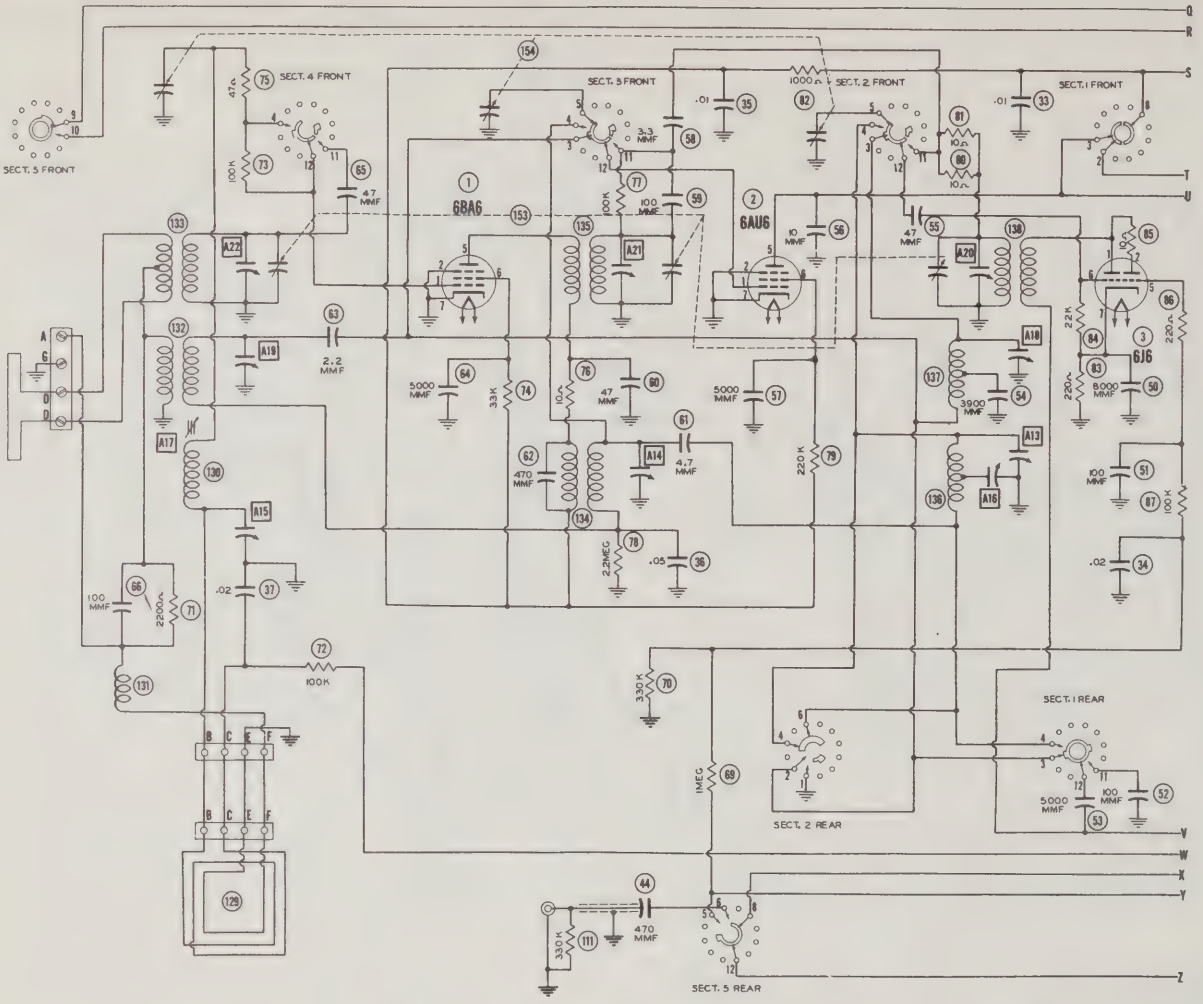
DIAL LIGHT

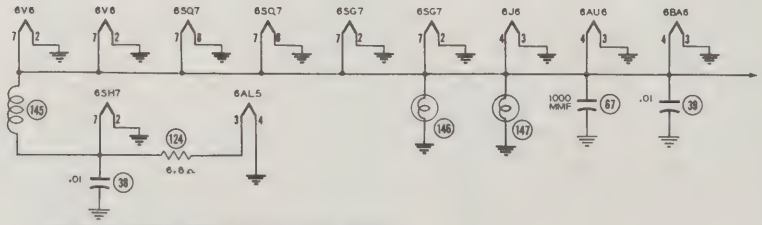
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					DELCO PART No.		
146-148	Bayonet	6-8	0.25	Blue	39A003		Type 44

MISCELLANEOUS

ITEM No.	PART NAME	HALLICRAFTERS PART No.	NOTES
149	Switch	13A092	Muting
150	"	60C308	Band
151	"	60B309	Power
152	"	60B310	Tone
153	3 Gang Var. Cap.	44A194	FM
154	" " " "	48C176	AM (12-475MMF) each section
	Trimmer Assby.	44B348	A13, A14, A15, A16, A18, A19
A20	Trimmer	44A218	FM Osc. Adj.
A21	"	44A192	FM RF Adj.
A22	"	44A194	FM Ant. Adj.
	Dial Pointer	82A145	FM
	" "	82A146	AM
	Dial Glass	22D195	Upper
	" "	22D194-1	Lower







VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	-.5VDC	0V.	0V.	6.6VAC	260VDC	127VDC	0V.	-
2	6AU6	-.6VDC	0V.	0V.	6.6VAC	265VDC	80VDC	0V.	-
3	6J6	266VDC	266VDC	0V.	6.6VAC	0V.	-16VDC§	1.7VDC	-
4	6SQ7	0V.	0V.	0V.	-.6VDC	0V.	111VDC	6.6VAC	262VDC
5	6SQ7	0V.	0V.	2.6VDC	0V.	2.6VDC	142VDC	6.6VAC	266VDC
6A	6SH7	0V.	0V.	0V.	-.6VDC	0V.	0V.	6.6VAC	0V.
‡ 6B	6SH7	0V.	0V.	0V.	-.6VDC	0V.	60VDC	6.6VAC	60VDC
‡ 7	6AL5	0V.	0V.	6.3VAC	0V.	.2VDC	0V.	-.2VDC	-
8	6SQ7	0V.	0V.	1.4VDC	0V.	0V.	125VDC	6.6VAC	0V.
9	6SQ7	0V.	0V.	1.7VDC	0V.	0V.	165VDC	6.6VAC	0V.
10	6V6GT	0V.	0V.	345VDC	330VDC	0V.	0V.	6.6VAC	21VDC
11	6V6GT	0V.	0V.	355VDC	330VDC	0V.	0V.	6.6VAC	21VDC
12	5Y3GT	0V.	360VDC	0V.	340VAC	0V.	340VAC	0V.	360VDC

TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	1.5 Meg.	0Ω	0Ω	.05Ω	73KΩ	110KΩ	0Ω	-
2	6AU6	2.2 Meg.	0Ω	0Ω	.05Ω	72KΩ	200KΩ	0Ω	-
3	6J6	77KΩ	77KΩ	0Ω	.05Ω	44KΩ	22KΩ	220Ω	-
4	6SQ7	0Ω	0Ω	0Ω	1.6 Meg.	0Ω	140KΩ	.05Ω	72KΩ
5	6SQ7	0Ω	0Ω	220Ω	9.5Ω	220Ω	120KΩ	.05Ω	74KΩ
6A	6SH7	0Ω	0Ω	0Ω	420KΩ	0Ω	INF.	.05Ω	INF.
‡ 6B	6SH7	0Ω	0Ω	0Ω	420KΩ	0Ω	122KΩ	.05Ω	102KΩ
‡ 7	6AL5	1.5 Meg.	1.5 Meg.	3Ω	0Ω	470KΩ	0Ω	470KΩ	-
8	6SQ7	0Ω	2 Meg.	300Ω	0Ω	0Ω	540KΩ	.05Ω	0Ω
9	6SQ7	0Ω	100KΩ	3.5KΩ	0Ω	0Ω	250KΩ	.05Ω	0Ω
10	6V6GT	0Ω	0Ω	70KΩ	70KΩ	430KΩ	100KΩ	.05Ω	330Ω
11	6V6GT	0Ω	0Ω	70KΩ	70KΩ	570KΩ	INF.	.05Ω	330Ω
12	5Y3GT	INF.	70KΩ	INF.	60Ω	INF.	63Ω	INF.	70KΩ

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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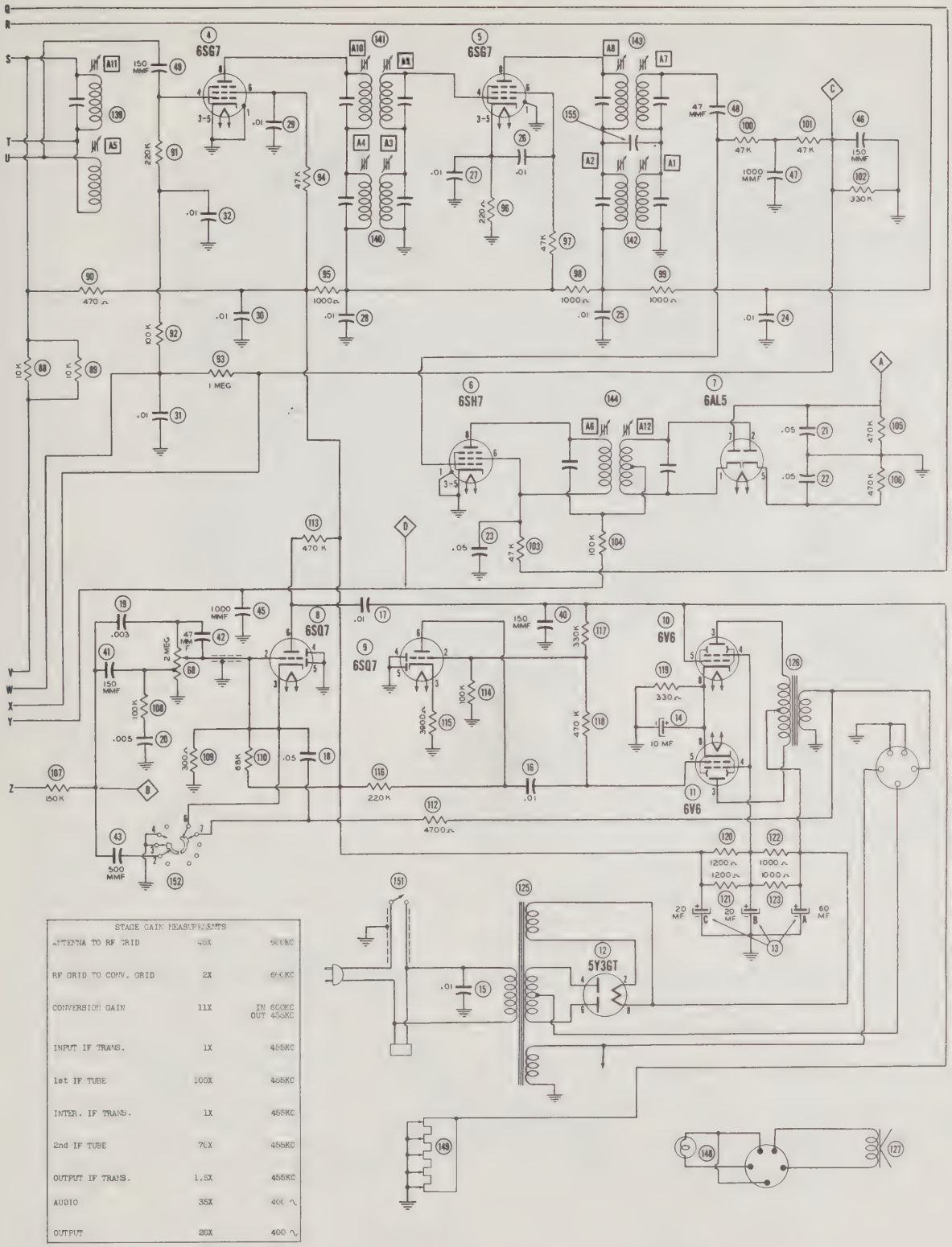

STAGE GAIN MEASUREMENTS		
ANTENNA TO RF GRID	4X	600KC
RF GRID TO CONV. GRID	2X	600KC
CONVERSION GAIN	11X	IN 600KC OUT 455KC
INPUT IF TRANS.	1X	455KC
1st IF TUBE	100X	455KC
INTER. IF TRANS.	1X	455KC
2nd IF TUBE	70X	455KC
OUTPUT IF TRANS.	1.5X	455KC
AUDIO	35X	400 ∿
OUTPUT	20X	400 ∿

IF = 455KC AM

IF = 10.7MC FM

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use scales on dial pointer rails for calibration purposes. These are accessible after dial backplate has been removed. With tuning cap. fully closed set right edges of dial pointer saddles to "0" on both scales.

Standard RMA dummy antenna consists of 200MMFD cap. in series with a 20 microhenry RF choke with choke shunted by a 400 MMFD cap. in series with a 400Ω carbon resistor.

Use insulated alignment screwdriver for all adjustments.

If VTVM is not available, a 20KΩ/volt DC voltmeter may be used.

RM I F ALIGNMENT

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD.	High side to stator of center section of AM tuning cap. Low side to chassis.	455KC	BC (1 position clockwise)	Mid position of calibration strip.	Across voice coil.	A1,A2, A3,A4, A5	Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
2	.01 MFD.	High side to stator of center section of FM tuning cap. Low side to chassis.	10.7MC (Unmodulated)	FM (2 positions clockwise)	FM calibration strip #55.	DC probe to Point Ⓐ. Common to chassis.	A6,A7, A8,A9, A10, A11	Adjust for maximum deflection.
3	.01 MFD.	"	"	"	"	DC probe to Point Ⓑ. Common to ground.	A12	Adjust for zero deflection.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use freq. modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
2	.01 MFD	High side to Pin 4 (grid) of 6SG7 1st IF Tube (4). Low side to chassis.	10.7MC (Freq. Mod.)	FM (2 pos. clockwise)	FM calibration Strip #55.	Vertical input to Point Ⓒ. Ground to chassis.	A7,A8, A9,A10	Adjust for maximum amplitude, symmetry and coincidence of pattern per Fig. 1.
3	.01 MFD	High side to stator of center section of FM tuning cap. Low side to chassis.	"	"	"	"	A11	"
4	.01 MFD	High side to Pin 4 (grid) of 6SG7 1st IF Tube (4). Low side to chassis.	"	"	"	Vertical input to Point Ⓓ. Ground to chassis.	A6, A12	Alternately adjust A6 for maximum amplitude and A12 for maximum straightness of crossover lines with crossover occurring at center of pattern per Fig. 2.

RF ALIGNMENT

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
5	RMA Dummy	High side to terminal "A" on ant. terminal strip. Low side to chassis.	1500KC	BC	AM calibration strip #82.	Across voice coil.	A13	Adjust for maximum output.
6	"	"	"	"	Tune for maximum output.	"	A14, A15	Adjust for maximum output.
7	"	"	600KC	"	AM calibration strip #15.5.	"	A16	" " " "
8	"	"	"	"	Tune for maximum output.	"	A17	Adjust for maximum output. Repeat Steps 5, 6, 7 & 8 until no further improvement can be made.
9	"	"	16MC	SW (fully counter-clockwise)	AM calibration strip #84.	"	A18	Adjust for maximum output.
10	"	"	"	"	Tune for maximum output.	"	A19	Rock tuning cap. and adjust for maximum output.
						CONNECT VTVM		
11	2 150Ω carbon res.	Each side to "D" terminal on ant. terminal strip.	108MC (Unmodulated)	FM	FM calibration strip #83.5	DC probe to Point Ⓓ. Common to chassis.	A20	Adjust for maximum deflection.
12	"	"	"	"	Tune for maximum output.	"	A21, A22	" " " "

FIG. 1

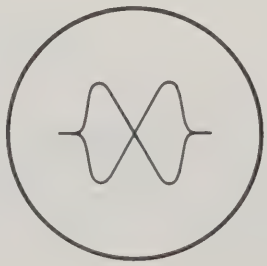
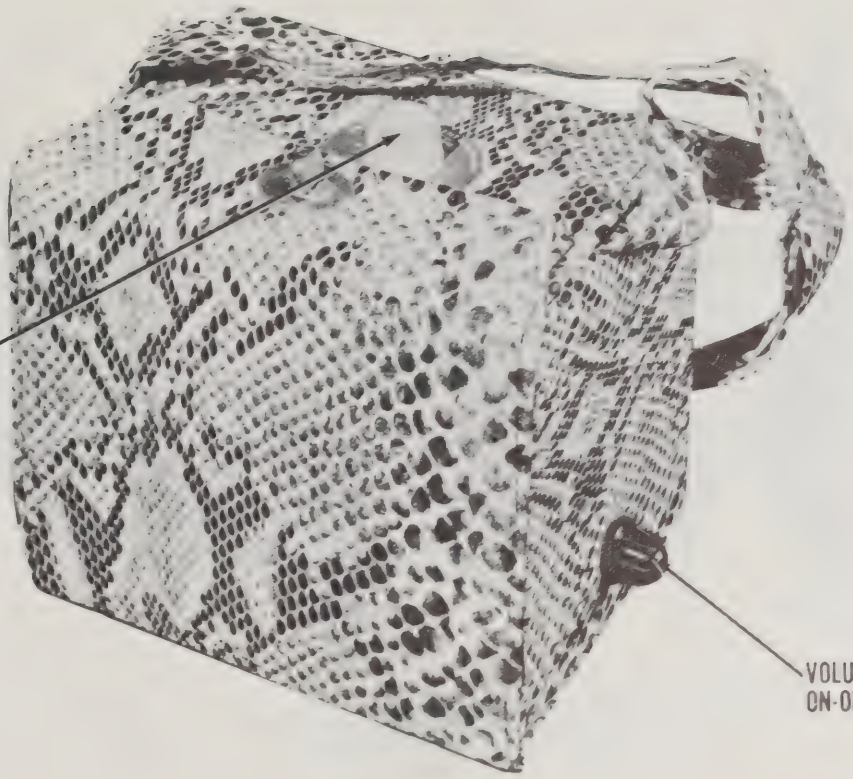


FIG. 2

MAGIC TONE MODEL 510
BATTERY OPERATED



MAGIC TONE MODEL 510
BATTERY OPERATED

MAGIC TONE MODEL 510

TRADE NAME	Magic Tone, Model 510
MANUFACTURER	Radio Development & Research Corp., 25Z W. 54th St., New York 19, N.Y.
TYPE SET	Battery Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types, 1R5 Converter, 1T4 IF Amp., 1S5 Det.-AVC-AF, 3Q4 Power Output
POWER SUPPLY	1.5 Volts "A" Supply and 67.5 Volts "B" Supply
RATING	240MA @ 1.5 Volts DC and 14MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 6 (grid) of 1R5. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1, A2, A3, A4.	Adjust for maximum output.
2		Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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DATE 12/48-#4822-10 SET #52-FOLDER #10

PARTS LIST AND DESCRIPTIONS

MAGIC TONE
MODEL 51C

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		MAGIC TONE PART No.	STANDARD REPLACEMENT		
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1T4	1T4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3Q4	3Q4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MAGIC TONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	
5	.1	400		484-.1	GT4P1	ST-4-1	68P36	RF Bypass Pwr. Supply
6	.001	600		484-001	GT6D1	ST-6-001	68P26	Output Plate Bypass
7	.002	600		484-002	GT6D2	ST-6-002	68P27	Audio Coupling
8	.002	600		484-002	GT6D2	ST-6-002	68P27	" "
9	.01	400		484-01	GT4S1	ST-4-01	68P33	AF Screen Bypass
10	.05	200		484-05	GT2S5	ST-4-05	68P35	AVC Filter
11	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	Output Grid Bypass
12	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	Diode RF Filter
13	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	Osc. Grid Cap.

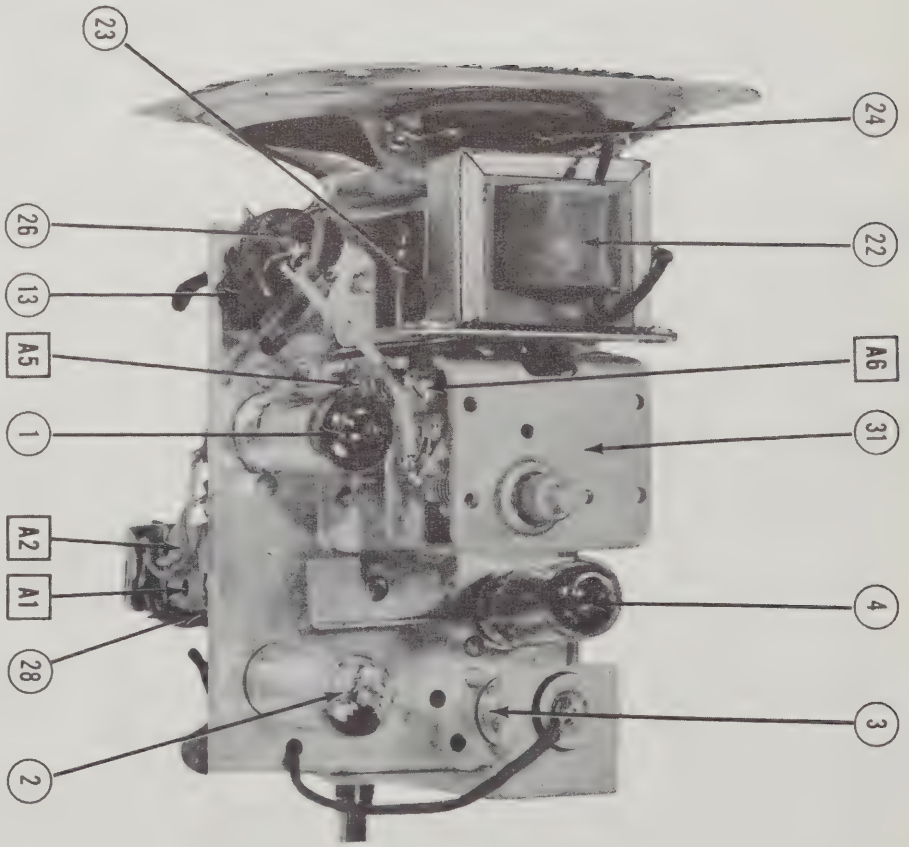
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	MAGIC TONE PART No.	IRC PART No.	CLAROSTAT PART No.	
14A	500Ka	½		D1S-133	M-60-Z	Volume Control
B	Shaft			A	Not Req.	Attach to 14A per instructions
C	Switch			41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MAGIC TONE PART No.	IRC PART No.	
15	100Ka	½		BTS-100K	Br.-Blk.-Yl. Oscillator Grid
16	33Ka	½		BTS-33K	Or.-Or.-Or. " "
17	2 Meg.	½		BTS-2.2 Meg.	Red-Blk.-Grn. AVC Network
18	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AF Grid
19	3.9 Meg.	½		BTS-3.9 Meg.	Or.-White-Grn. AF Screen Dropping
20	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
21	2 Meg.	½		BTS-2.2 Meg.	Red-Blk.-Grn. Output Grid

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MAGIC TONE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
22	10KΩ	3.1Ω	530Ω	.7Ω		A-3879	T22S86	A-2932	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MAGIC TONE PART No.	JENSEN PART No.	QUAM PART No.	
23	FIELD PM	VC IMP. 3.1Ω			4A07†	†Drill and tap magnet frame.
24	CONE DIA. 4"	VC DIA. 9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	MAGIC TONE PART No.	MEISSNER PART No.	
25	Loop Ant.		2.8Ω			
26	Osc. Coil	1.8Ω	7Ω			
27	Input IF	20Ω	20Ω		16-6668	
28	Output IF	20Ω	20Ω		16-6669	

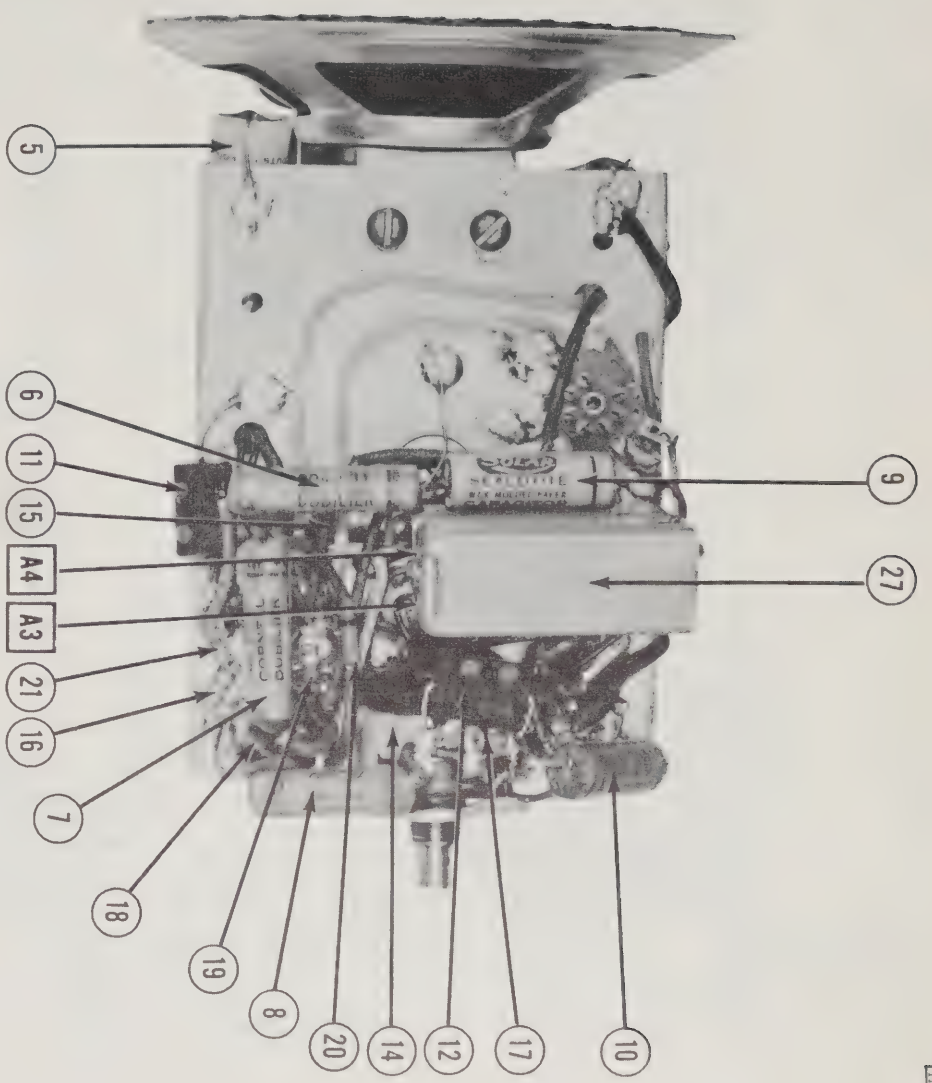
BATTERIES

ITEM No.	VOLTAGE	MAGIC TONE PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
29	1.5V "A"		950			2R			
30	67.5V"B"			467			XX45		

MISCELLANEOUS

ITEM No.	PART NAME	MAGIC TONE PART No.	NOTES
31	2 Gang Var. Cap		(31-453MMF, 34-201MMF)

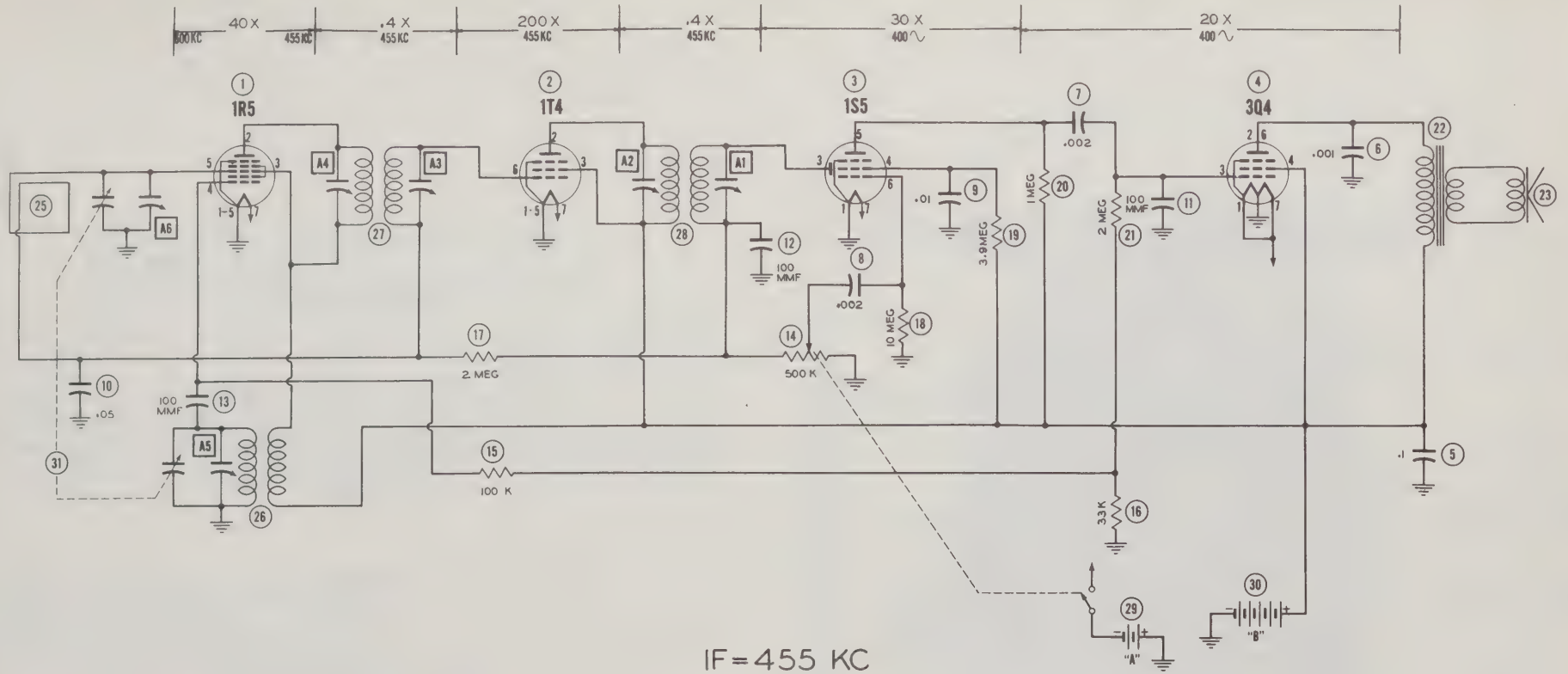
CHASSIS—BOTTOM VIEW



DATE 12/48-#4822-10 SET #52-FOLDER #10

MAGIC TONE MODEL 510

MAGIC TONE MODEL 510



IF = 455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	0V.	65VDC	65VDC	§-15.5VDC	0V.	0V.	1.4VDC
2	1T4	0V.	65VDC	65VDC	-.1VDC	0V.	-.1VDC	1.4VDC
3	1S5	0V.	-3.3VDC	-.2VDC	13VDC	13.5VDC	0V.	1.4VDC
4	3Q4	1.4VDC	63VDC	-.3VDC	65VDC	0V.	63VDC	1.4VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	0Ω	INF.	INF.	133KΩ	0Ω	2.5 Meg	*
2	1T4	0Ω	INF.	INF.	2.5 Meg.	0Ω	2.5 Meg.	*
3	1S5	0Ω	33KΩ	500KΩ	INF.	INF.	10 Meg.	*
4	3Q4	*	INF.	2 Meg.	INF.	0Ω	INF.	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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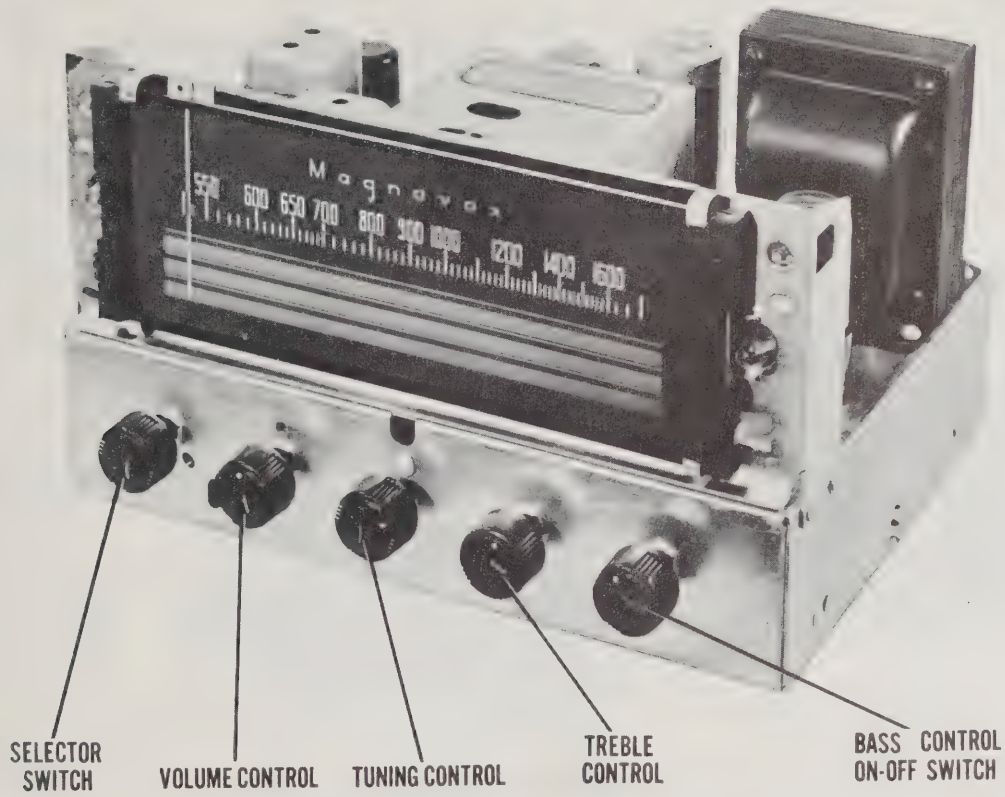
4822-10

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting AVC to chassis.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5 - Volume control at maximum, no signal applied for voltage measurements.

MAGNAVOX MODELS
CR-210A, CR-210B



MAGNAVOX MODELS
CR-210A, CR-210B

TRADE NAME	Magnavox, Chassis Models CR-210A, CR-210B
MANUFACTURER	Magnavox Co., 2131 Bueter Rd., Fort Wayne, Ind.
TYPE SET	AC Operated Superheterodyne Receiver with Loop Antenna
TUBES (SEVEN)	Types, 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SQ7 Det.-AVC-AF, 6SG7 AF Amp., 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	540-1680KC RATING .60 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	250MMFD	High side to Pin 8 (grid) of 6SA7. Low side to chassis.	455KC	Tuning cap. fully closed.	Across voice coil	A1,A2, A3,A4	Adjust for maximum output.
2	250MMFD	High side to ant. terminal "H". Low side to term. "L".	1400KC	1400KC	"	A5	" " " "
3	250MMFD	"	"	Tune for maximum output.	"	A6,A7	" " " "
4	250MMFD	"	600KC	600KC	"	A8,A9	Rock tuning cap. and adjust A8 for maximum output and then adjust A9 for maximum output. Repeat Steps 2, 3 and 4 until no further improvement can be made.
5		Loop	1400KC	Tune for maximum output.	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MAGNAVOX PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC	6SQ7	6SQ7	8Q	
5	AF Amp.	6SG7	6SG7	8BK	
6	Power Output	6V6GT	6V6GT	7AC	
7	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MAGNAVOX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8A	30	475	27002IG6	AF444J4A‡	UP22245C‡		EL-330	● Filter
B	20	475						■ "
C	20	25						▲ Cathode Bypass
9	.02	600	250129G3	684-02	GT6S2	ST-6-02	TC-12	Line Filter
10	.02	600		684-02	GT6S2	ST-6-02	TC-12	" "
11	.1	400	250152G19	484-.1	GT4P1	ST-4-1	TC-1	RF Bypass Pwr. Supply
12	.0015	600	250169G1	1467-0015	1W5D15	MW.5-215	1FM-215	Tone Compensation
13	.005	600	250152G41	684-005	GT6D5	ST-6-005	TC-25	" "
14	.003	600	250152G43	684-003	GT6D3	ST-6-003	TC-23	Audio Coupling
15	.1	400	250152G19	484-.1	GT4P1	ST-4-1	TC-1	Tone Compensation
16	.008	400	250152G28	484-0075	1D3D8	MW.3-28	1FM-28	" "
17	.01	200	250152G18	484-01	GT2S1	ST-4-01	TC-11	Audio Coupling
18	.05	200	250152G15	484-05	GT2S5	ST-4-05	TC-15	AVC Filter
19	.05	200	250152G15	484-05	GT2S5	ST-4-05	TC-15	IF Cathode Bypass
20	.1	400	250152G19	484-.1	GT4P1	ST-4-1	TC-1	Screen Decoupling
21	.05	200	250152G15	484-05	GT2S5	ST-4-05	TC-15	RF Cathode Bypass
22	.02	600	250129G3	684-02	GT6S2	ST-6-02	TC-12	Phono Line Filter
23	680	500	250159G136	1468-00075	1W5T7	MO.5-37	1FM-37	AF Plate Bypass
24	820	500	250159G132	1468-00075	1W5T8	MO.5-38	MS-38	Tone Compensation
25	180	500	250159G85	1468-0002	5W5T2	MO.5-32	1FM-32	" " -Sil.
26	470	500	250159G102	1468-0005	5W5T5	MO.5-35	1FM-35	" " -Note
27A	100	300	*	1468-0001	5W5T1	MO.5-31	1FM-31	Diode RF Filter-Cer.
B	100	300		1468-0001	5W5T1	MO.5-31	1FM-31	" " "
28	75	300		1468-000075	5W5Q7	MOS.5-47	1FM-475	Osc. Grid Cap. "
29	220	500	250159G100	1468-0002	5W5T2	MO.5-32	1FM-32	RF Coupling

‡Parallel sections to obtain desired capacity.
*Items #27A & B and 41 are combined into one unit obtainable under Manufacturers Part #25017001.

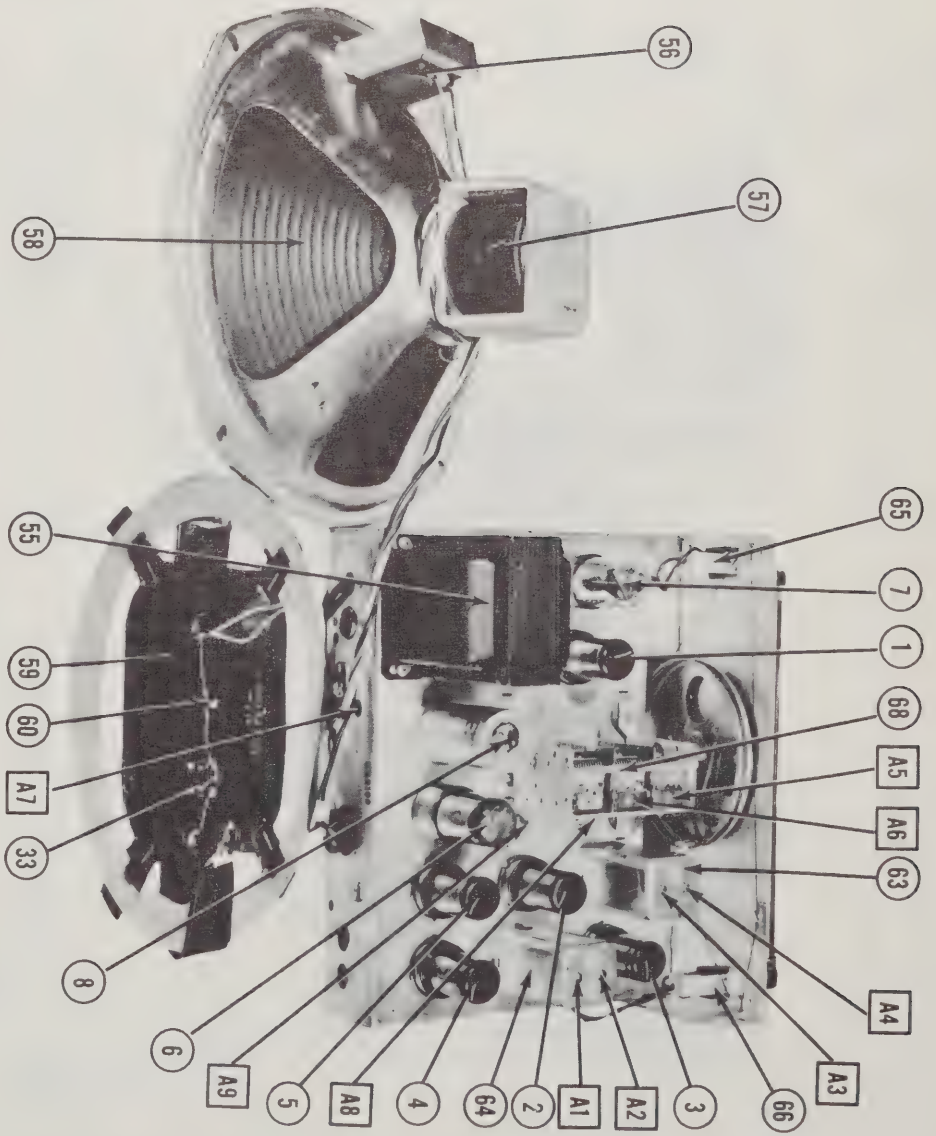
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAGNAVOX PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
30A	1 Meg.	½	220072G15	D13-137	M-63-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 31A per instructions
31	1 Meg.	½	220073G12			Bass Control
32A	2 Meg.	½	220072G16	D13-139	M-66-Z	Treble Control
B	Shaft		Not Req.	A	Not Req.	Attach to 33A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAGNAVOX PART No.	IRC PART No.	IDENTIFICATION CODES
33	2200Ω	½	230084G15	BTS-2200	Red-Red-Red Antenna Loading
34	1 Meg.	½	230084G98	BTS-1 Meg.	Br.-Blk.-Grn. RF Grid
35	470Ω	½	230084G11	BTS-470	Yl.-Vi.-Br. RF Cathode
36	4700Ω	½	230084G17	BTS-4700	Yl.-Vi.-Red RF Coil Shunt
37	22KΩ	½	230084G21	BTS-22K	Red-Red-Or. Oscillator Grid
38	2200Ω	½	230084G15	BTS-2200	Red-Red-Or. IF Cathode
39	1 Meg.	½	230084G98	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
40	150KΩ	½	230084G26	BTS-150K	Br.-Grn.-Yl. Diode Load
41	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Diode RF Filter-See Note 1
42	680KΩ	½	230084G30	BTS-680K	Blue-Gray-Yl. AF Grid
43	100Ω	½	230084G7	BW-½-100	Br.-Blk.-Br. AF Cathode
44	15KΩ	2	230086G76	BT-2-15K	Br.-Grn.-Or. AF Cathode Bias

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MAGNAVOX PART No.	IRC PART No.	
45	820K2	½	230084047	BTS-820K	Gray-Red-Yl. AF Screen Dropping
46	220K2	½	230084027	BTS-220K	Red-Red-Yl. AF Plate Load
47	470K2	½	230084029	BTS-470K	Yl.-Vl.-Yl. Output Grid
48	390Ω	1	230085057	BW-1-390	Or.-White-Br. Output Cathode
49	6.8 Meg.	½	230084036	BTS-6.8 Meg.	Blue-Gray-Grn. Feedback
50	1 Meg.	½	230084098	BTS-1 Meg.	Br.-Blk.-Grn. "
51	10K2	1	230085019	BTA-10K	Br.-Blk.-Or. "
52	12,500Ω	10	240021014	AB-12500	Decoupling
53	3.9 Meg.	½	230084105	BTS-3.9 Meg.	Or.-White-Grn. Series Phono-See Note 2
54	470K2	½	230084029	BTS-470K	Yl.-Vl.-Yl. Phono Tone Compensation-See Note 3

Note 1 - Items 27A, B & 41 can be obtained as one unit under Part #25017001.
Note 2 - Chassis CR-210A uses 10 Meg. in this application. IRC replacement BTS-10 Meg.
Note 3 - Chassis CR-210A uses 47K2 in this application. IRC replacement BTS-47K.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC 1	SEC 2	SEC 3	MAGNAVOX PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
55	117V AC @ .6A	750V CT @ .065A	5.4V AC @ 2.0A	6.6V CT @ 2.4A	300044G1	P-4078	T22R31§	P-3151§

§Drill one new mounting hole.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MAGNAVOX PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
56	4850Ω	3.2Ω	430Ω	.3Ω	Part of 583166	A-3825	T22S58	A-2902	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MAGNAVOX PART No.	JENSEN PART No.	QUAM PART No.	
57	FIELD RES. 1560Ω	VC IMP. 3.2Ω	583166	ST-173 Mod. F12-8	12E15†	†Replace output transformer to match 6-8Ω voice coil.
58	CONE DIA. 11"	VC DIA. 1"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	MAGNAVOX PART No.	MEISSNER PART No.	
59	Loop Ant.	.1Ω	1Ω			Order by style number
60	Loop Load. Coil		8Ω			
61	RF Coil	23.5Ω	3.5Ω	36032901	14-1067	
62	Osc. Coil		4.8Ω	36033501		
63	Input IF	24Ω	24Ω	36370004	16-5712	
64	Output IF	24.3Ω	25Ω	36370005	16-5714	

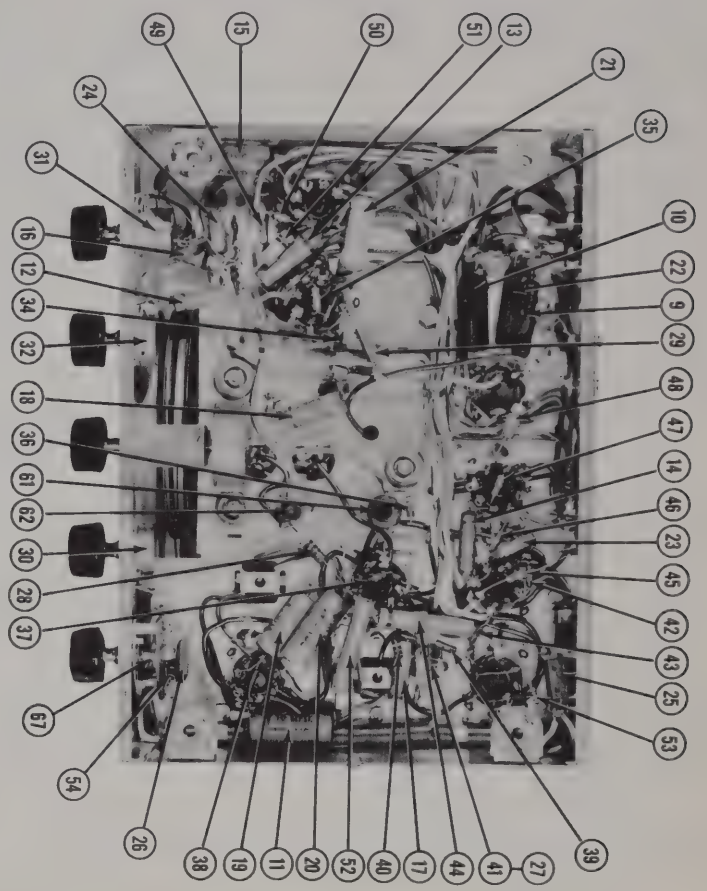
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MAGNAVOX PART No.		
65	Bayonet	6-8	0.25	Blue			Type 44
66	"	"	"	"			" "

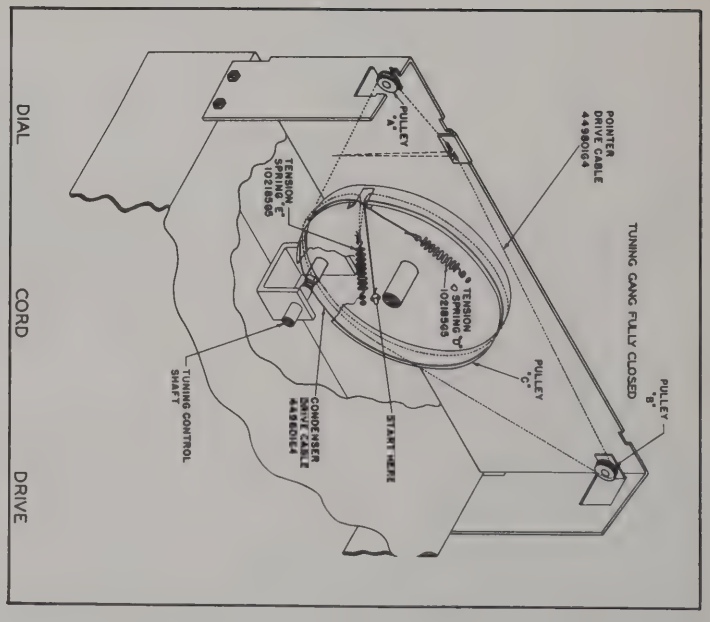
MISCELLANEOUS

ITEM No.	PART NAME	MAGNAVOX PART No.	NOTES
67	Switch	16019101	Selector
68	3 Gang Var. Cap.	26009901	(15-500MMF, 39-521MMF, 40-210MMF)
	Dial Glass	15031701	

CHASSIS—BOTTOM VIEW



DIAL CORD DRIVE



DIAL CORD REPLACEMENT

Two separate drive cables are used in the CR-210A. One cable is used to transmit the motion from the tuning control to the large pulley that is coupled to the condenser gang; the other cable actuates the dial pointer whenever the large pulley on the condenser gang is rotated. Separate instructions for replacing either of these cables is given in the following paragraphs.

CONDENSER DRIVE CABLE REPLACEMENT

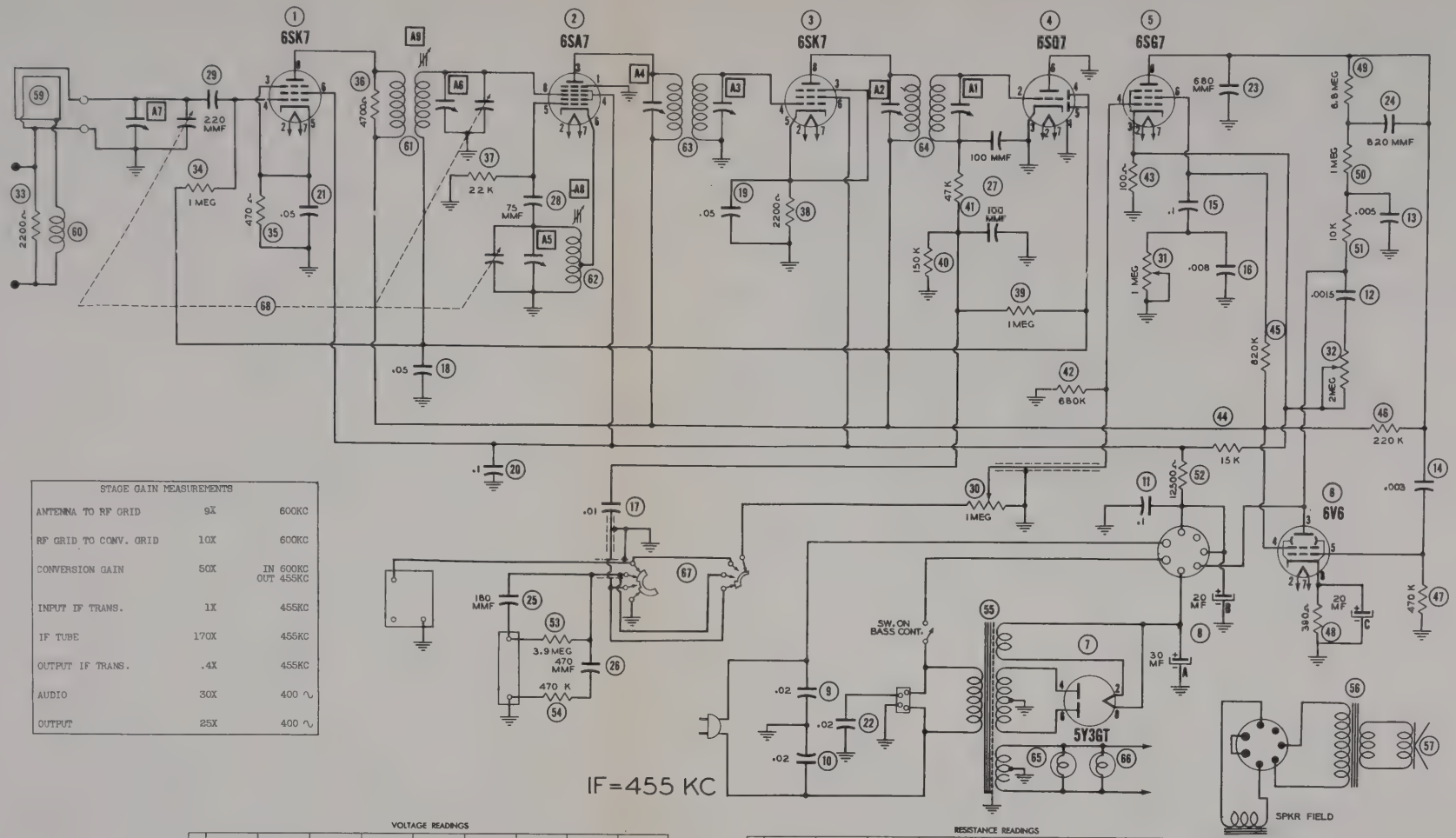
Remove dial assembly after taking out two screws on each side of chassis. Slide a short length (approximately ¼ inch) of sleeving over small end of a length of dial cable. Tie the spring "E" in the manner shown on drawing. Tie spring to opposite end of cable making length including spring 20-3/4 inches. Hook loop over the metal hook in pulley "c" and lace the cable through the pulley slot and around pulley "c" in a counterclockwise direction keeping the cable to the rear of chassis. When pulley is in position, the cable will groove. Lace the cable around the smaller diameter portion of the tuning control shaft wrapping 2½ turns from front to back then around the opposite side of pulley "c" into the pulley through the slot. Hook the remaining end of spring "D" in the hole provided in pulley "c", completing this operation.

DIAL POINTER DRIVE CABLE REPLACEMENT

Remove dial assembly after taking out two screws on each side of chassis. Slip a one-half inch length of sleeving into a 42 inch length of dial cable. Tie the two ends to the spring "E" securely so that the cable doubled measures 20-3/4 inches end to end including spring.

Place spring hook in bottom hole and draw cable through slot of pulley "c". Loop one end of cable around pulley "c" in a clockwise direction in front of condenser drive cable (when viewed from front) then loop the remaining end around pulley "b" in a clockwise direction. Secure both ends of cable to chassis at edge of pulley slot with scotch tape, keeping piece of sleeving on remaining loop of cable.

Replace dial assembly and loop cable over pulley "A", while holding cable secure with scotch tape and loop cable over pulley "B". Turn the tuning control shaft until the condenser gang is completely meshed and slide the dial pointer on its track until it is in line with the last calibration mark at the right side of sleeving installed. The short piece of sleeving installed on the dial pointer and the crimping lug on the pointer pressed over the sleeving. After checking to make certain that the condenser gang is completely meshed and the dial pointer is in the position specified previously, apply a drop of cement to each end of the sleeving to which the cable is fastened. This completes the operation.



STAGE GAIN MEASUREMENTS		
ANTENNA TO RF GRID	9X	600KC
RF GRID TO CONV. GRID	10X	600KC
CONVERSION GAIN	50X	IN 600KC OUT 455KC
INPUT IF TRANS.	1X	455KC
IF TUBE	170X	455KC
OUTPUT IF TRANS.	.4X	455KC
AUDIO	30X	400 ∿
OUTPUT	25X	400 ∿

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	3.3VAC	3VDC	-.1VDC	3VDC	90VDC	3.3VAC	290VDC
2	6SA7	0V.	3.3VAC	290VDC	90VDC	-8VDC$	0V.	3.3VAC	-.2VDC
3	6SK7	0V.	3.3VAC	6VDC	0V.	6VDC	90VDC	3.3VAC	290VDC
4	6SQ7	0V.	-.1VDC	0V.	-.4VDC	-.4VDC	0V.	3.3VAC	3.3VAC
5	6SG7	0V.	3.3VAC	.6VDC	0V.	.6VDC	27VDC	3.3VAC	65VDC
6	6V6GT	0V.	3.3VAC	270VDC	290VDC	0V.	0V.	3.3VAC	16VDC
7	5Y3GT	0V.	400VDC	280VDC	375VAC	27VDC	375VAC	0V.	400VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	.05Ω	470Ω	2.1 Meg.	470Ω	42KΩ	.05Ω	30KΩ
2	6SA7	0Ω	.05Ω	30KΩ	42KΩ	22KΩ	1Ω	.05Ω	1.1 Meg.
3	6SK7	0Ω	.05Ω	2.2KΩ	24Ω	2.2KΩ	42KΩ	.05Ω	30KΩ
4	6SQ7	0Ω	200KΩ	0Ω	1.1 Meg.	1.1 Meg.	0Ω	.05Ω	.05Ω
5	6SG7	0Ω	.05Ω	100Ω	400KΩ	100Ω	850KΩ	.05Ω	250KΩ
6	6V6GT	0Ω	.05Ω	30KΩ	30KΩ	470KΩ	INF.	.05Ω	390Ω
7	5Y3GT	INF.	30KΩ	40KΩ	190Ω	850KΩ	210Ω	INF.	30KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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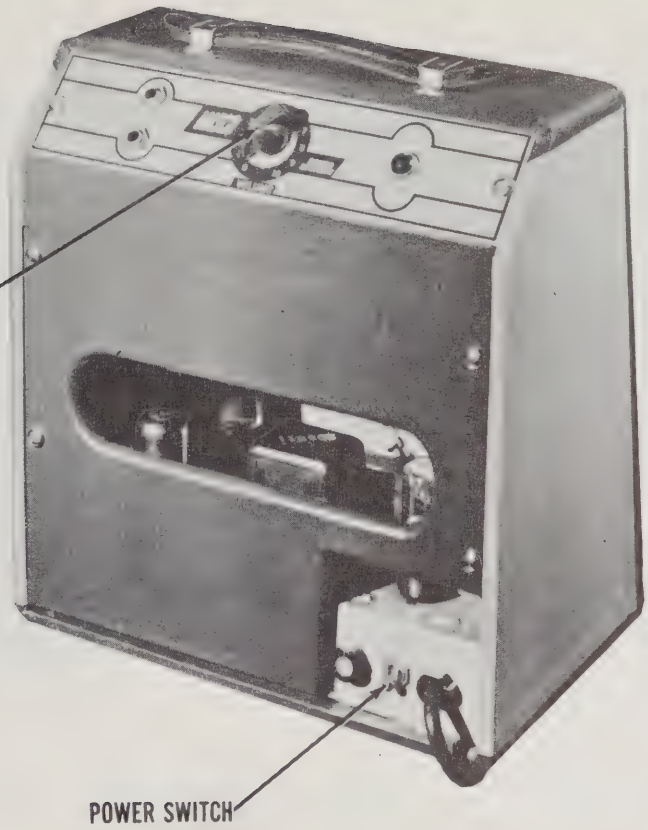

MASCO MODEL
MAP-105N

MASCO MODEL
MAP-105N

MASCO MODEL MAP-105N

TRADE NAME	Masco, Model MAP-105N
MANUFACTURER	Mark Simpson Mfg. Co., Inc., 32-28 49th St., Long Island City, N.Y.
TYPE SET	AC Operated Musical Instrument Amplifier
TUBES (THREE)	Types, 7F7 AF Amp., 6V6GT Power Output, 6X5GT Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .25 Amp. @ 117 Volts AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7F7	8.8VDC	.7VDC	70VDC	0V.	0V.	70VDC	.6VDC	8.8VDC
2	6V6GT/G	0V.	8.8VDC	280VDC	180VDC	0V.	290VDC	8.8VDC	8.8VDC
3	6X5GT/G	0V.	8.8VDC	250VAC	0V.	250VAC	0V.	8.8VDC	290VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7F7	250Ω	1KΩ	180KΩ	0Ω	470KΩ	180KΩ	1KΩ	250Ω
2	6V6GT/G	0Ω	250Ω	30KΩ	54KΩ	270KΩ	30KΩ	250Ω	250Ω
3	6X5GT/G	INF.	250Ω	190Ω	INF.	170Ω	INF.	250Ω	30KΩ

6.6V AC MEASURED BETWEEN FILAMENT PINS.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at minimum, no signal applied for voltage measurements.

HOWARD W. SAMS & CO., INC. **Indianapolis Indiana**

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PARTS LIST AND DESCRIPTIONS

MASCO
MODEL MAP-105N

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		MASCO PART No.	STANDARD REPLACEMENT		
1	AF Amp.	7F7	7F7	8AC	
2	Power Output	6V6GT	6V6GT	7AC	
3	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MASCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	
4	16	450		PRS450/16	BR1645	M-16-450	UT-16	Filter
5	16	450		PRS450/16	BR1645	M-16-450	UT-16	"
6	8	450		PRS450/8	BR845	M-8-450	UT-8	Decoupling
7	10	50		PR850/10	BR105	M-10-50	TA-510	Cathode Bypass
8	.1	600		684-.1	DT6P1	ST-6-1	TC-1	Line Filter
9	.005	600		684-005	DT6D5	ST-6-005	TC-25	Audio Coupling
10	.005	600		684-005	DT6D5	ST-6-005	TC-25	" "

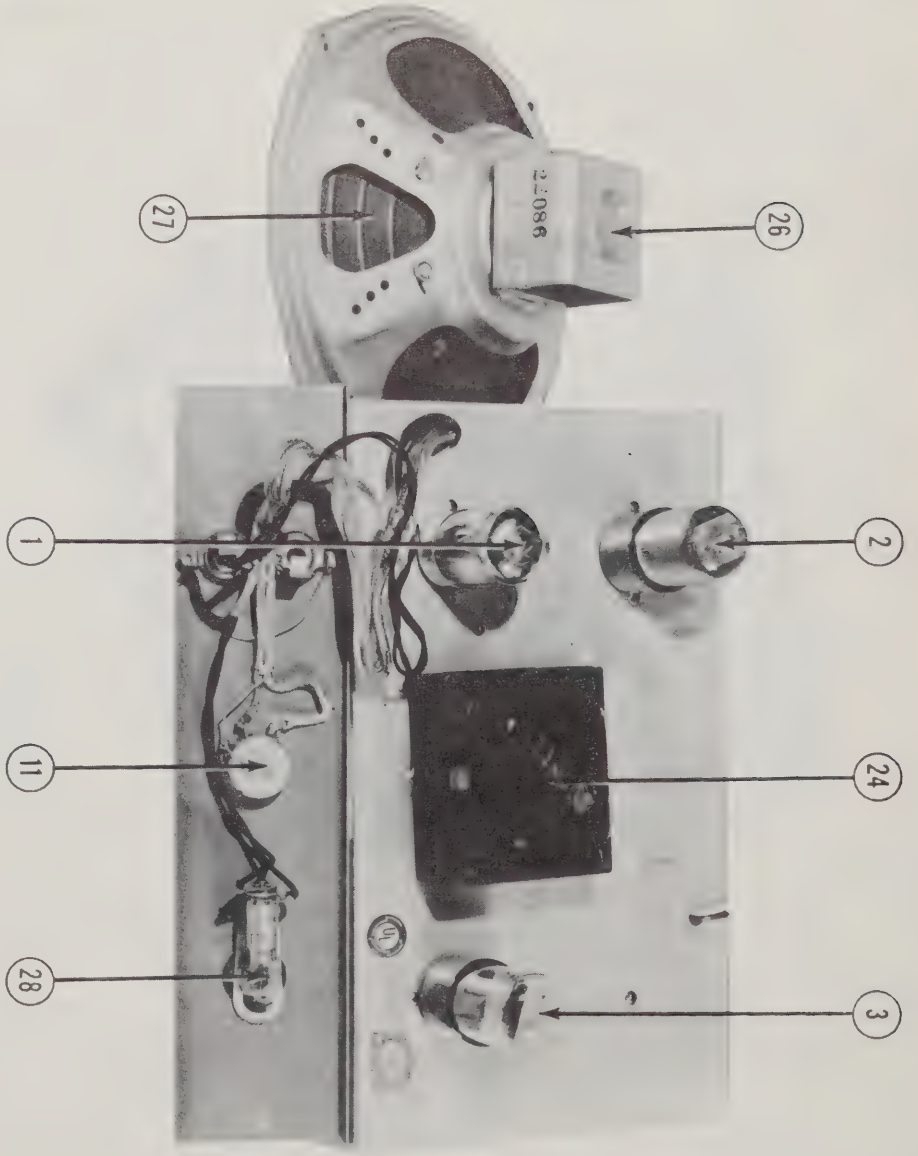
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	MASCO PART No.	IRC PART No.	CLAROSTAT PART No.	
11A	500KΩ	½		D13-133	M-60-Z	Volume Control
B	Shaft			A	Not Req.	Attach to 11A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MASCO PART No.	IRC PART No.	
12	470KΩ	½		BTS-470K	Yl.-Vl.-Yl. AF Grid
13	1000Ω	½		BTS-1000	Br.-Blk.-Red AF Cathode
14	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AF Plate Load
15	1000Ω	½		BTS-1000	Br.-Blk.-Red AF Cathode
16	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AF Plate Load
17	270KΩ	½		BTS-270K	Red-Vl.-Yl. Output Grid
18	27KΩ	½		BTS-27K	Red-Vl.-Or. Decoupling
19	470Ω	1		BW-1-470	Yl.-Vl.-Br. Output Cathode
20	470Ω	1		BW-1-470	Yl.-Vl.-Br. " "
21	47KΩ	½		BTS-47K	Yl.-Vl.-Or. Filter
22	47KΩ	½		BTS-47K	Yl.-Vl.-Or. "
23	15KΩ	½		BTS-15K	Br.-Grn.-Or. Feedback

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MASCO PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
24	117V AC @ .25A	500V CT .035A DC	6.6V AC @ 1.5A			P-6297*	T22R00*	P-3047*

*Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MASCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
25	4000Ω	3.3Ω	430Ω	.7Ω		A-3825	T22S60	A-2901†	†Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MASCO PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD RES.	VC IMP.		ST-117		
26	PM	3.3Ω		Mod. P8-T	8A31	
	CONE DIA.	VC DIA.				
27	7"	3/4"				

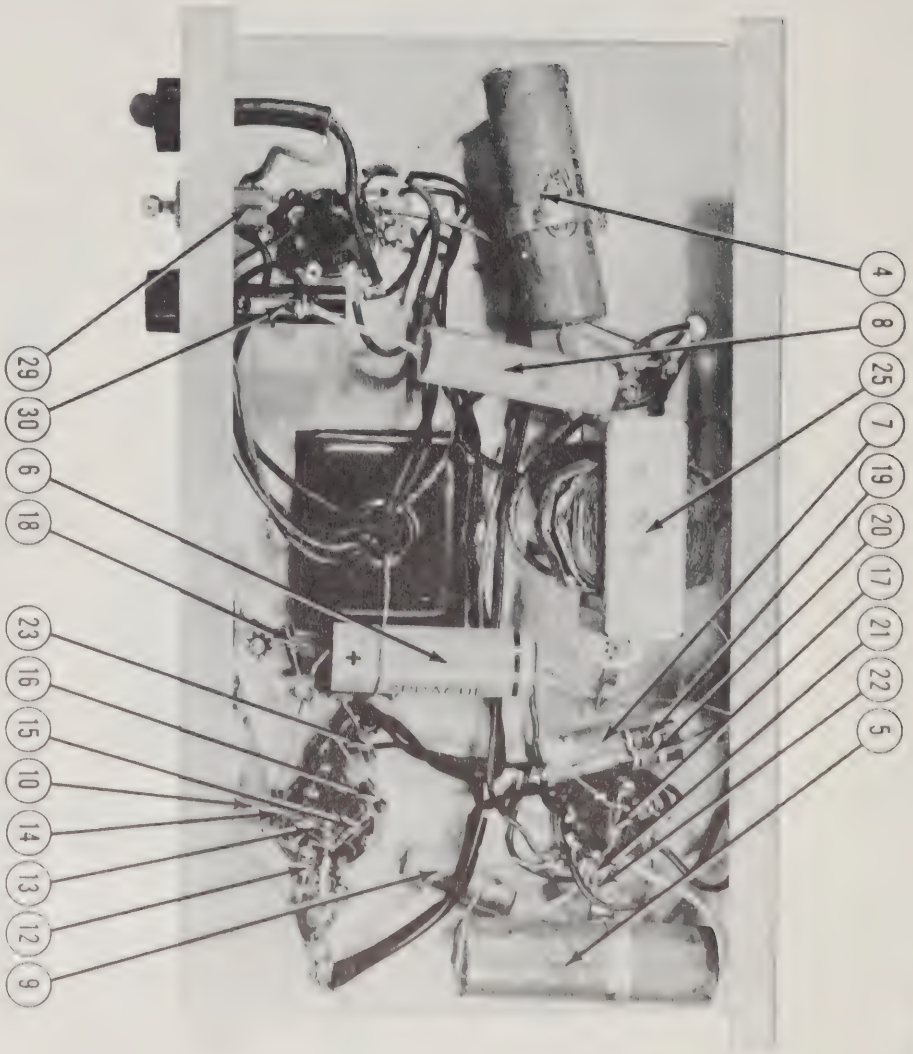
DIAL LIGHT

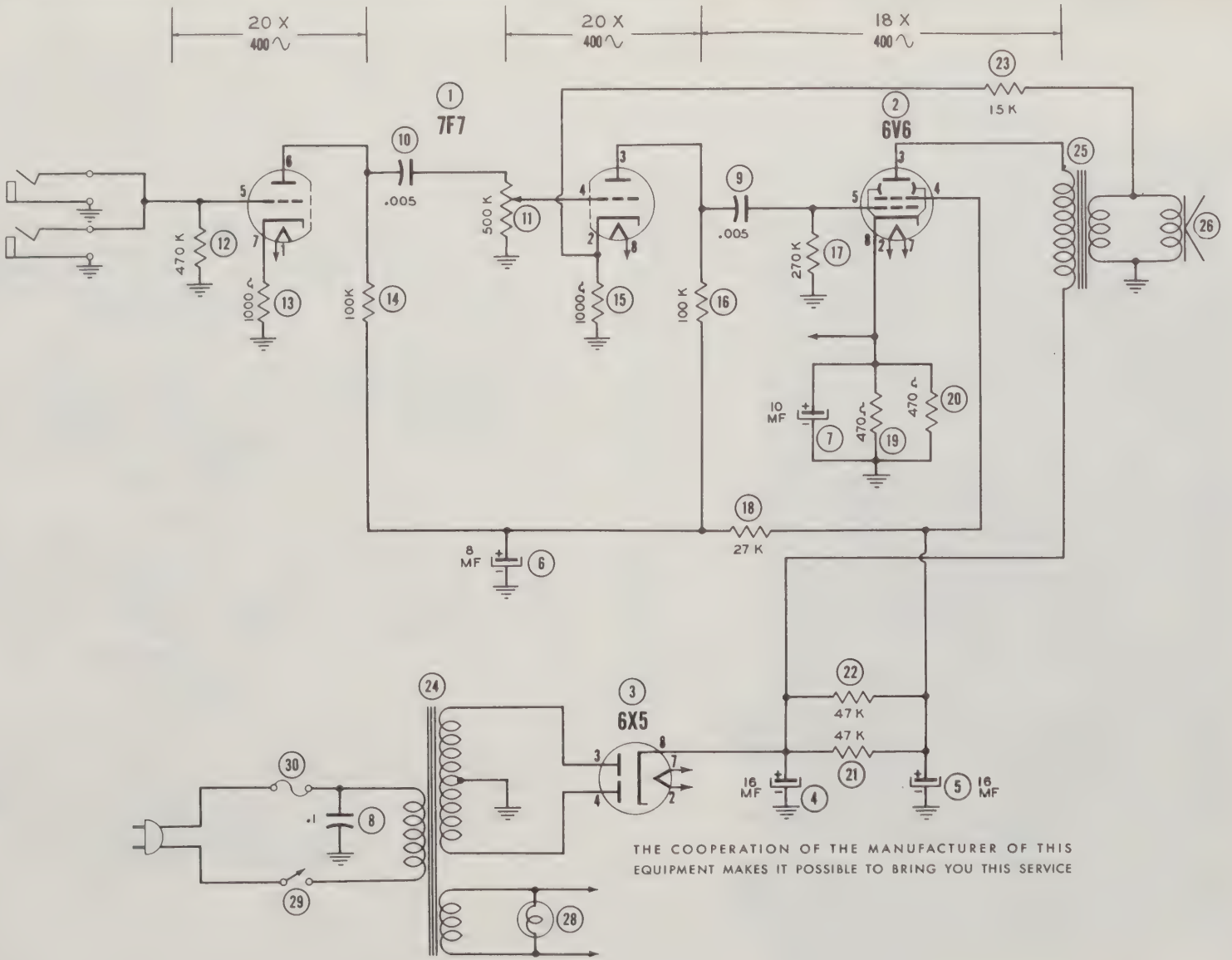
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MASCO PART No.		
28	Bayonet	6-8	0.15	Brown			Type 47

MISCELLANEOUS

ITEM No.	PART NAME	MASCO PART No.	NOTES
29	Switch		On-Off
30	Fuse		1 Amp.

CHASSIS—BOTTOM VIEW





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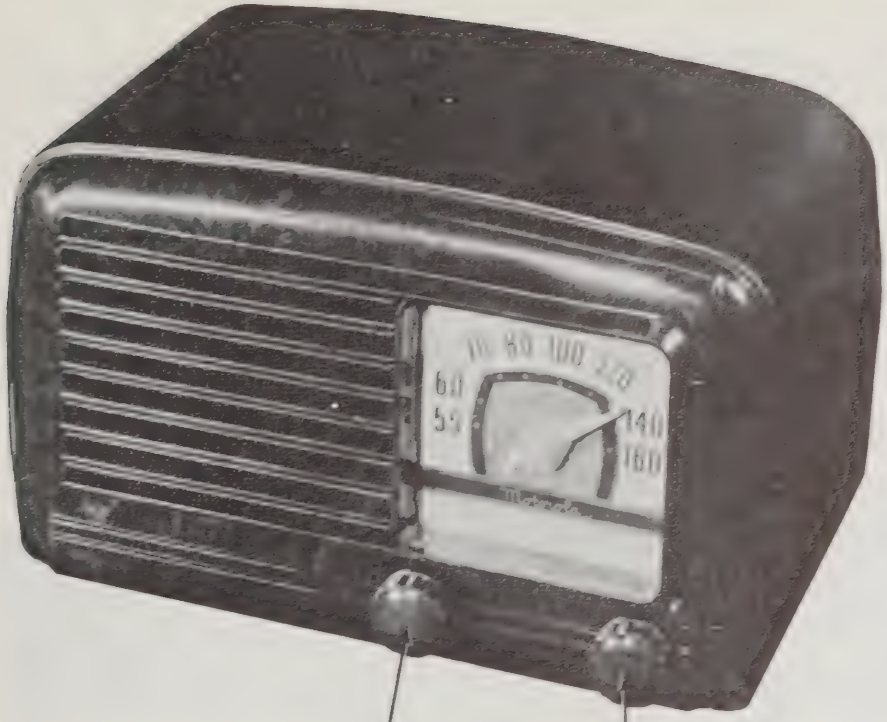
4822-12

MOTOROLA MODELS 58A11, 58A12 (Ch. HS-158)



MOTOROLA MODELS 58A11, 58A12 (Ch. HS-158)

MOTOROLA MODEL 58A11

TRADE NAME	Motorola, Models 58A11, 58A12 (Ch. HS-158)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago, Ill.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC
TUNING RANGE—BROADCAST	535-1620KC RATING .25 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2		Loop	1620KC	"	"	A5	Position loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	"	"	A6	Adjust for maximum output.

HOWARD W. SAMS & CO., INC. Indianapolis Indiana

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DATE 12/48-#4822-12 SET #52-[illegible] #12

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	8K	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	50	150	23K485146	PRSA150/30-50	EDL5315	DSB-5030-150	TA-530	Filter-Red
F	30	150						" -Green
7	.05	400	8S9816	484-05	GT4S5	ST-4-05	TC-15	Line Filter
8	.15	200	8A72686	484-.15	GT4P2	ST-4-2	72P3	Line Isolation
9	.02	400	8S9802	484-02	GT4S2	ST-4-02	TC-12	Output Plate Bypass
10	.05	200	8S9816	484-05	GT2S5	ST-4-05	TC-15	AVC Filter
11A	5000	300	*	464-005	GT6D5	ST-6-005	TC-25	Audio Coupling
B	220	300		1468-00025	5W5T25	MO.5-325	1FM-325	AF Plate Bypass
C	2000	300		464-002	GT6D2	ST-6-002	TC-22	Audio Coupling
D	220	300		1468-00025	5W5T25	MO.5-325	1FM-325	Diode RF Filter

*Items 11A, B, C & D are combined into one unit obtainable under Manufacturers Part #21B482847.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
12A	500KΩ	½	18A14629 or	D13-133	AM-60-Z	Volume Control
B	Shaft		18A72888	E	KSS-3	Attach to 12A per instructions
C	Switch		Not Req.	41	SW-A	" " " "

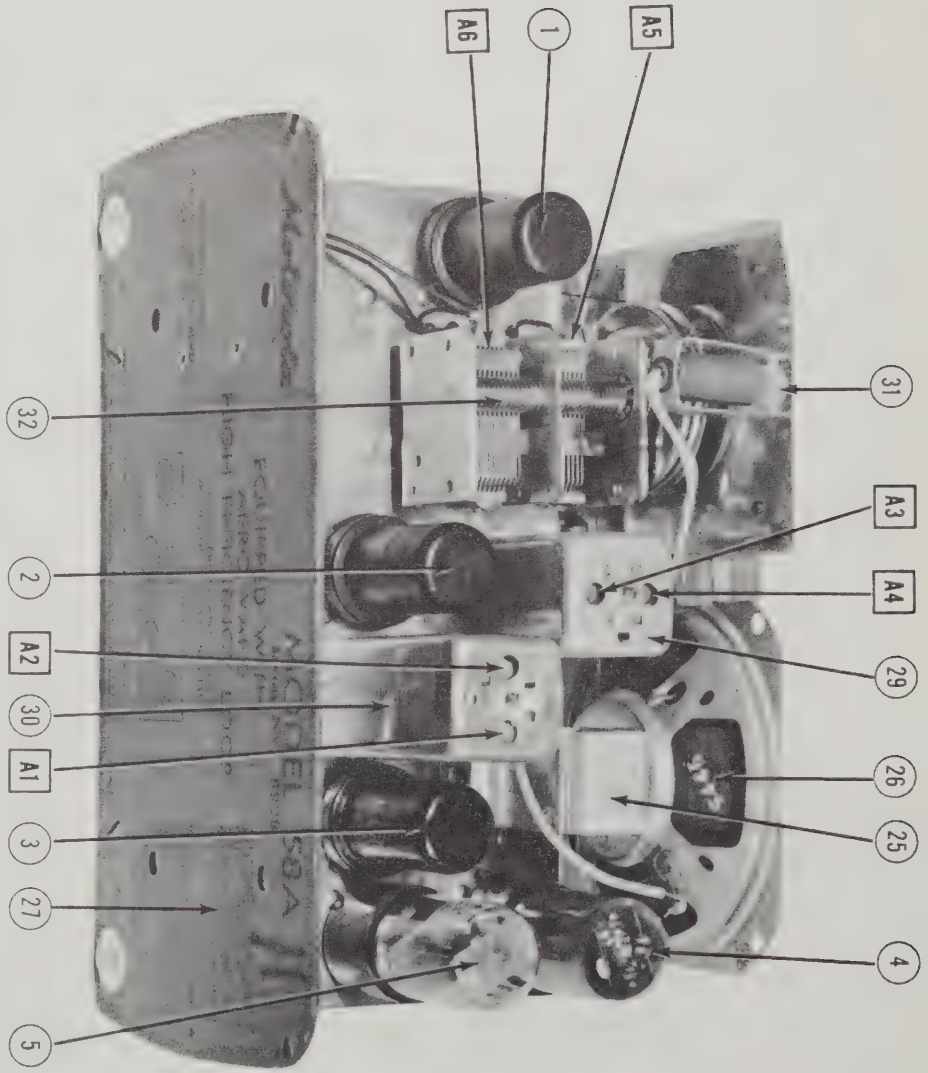
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	IDENTIFICATION CODES
13	22KΩ	½	6R6028	BTS-22K	Red-Red-Or. Osc. Grid
14	68Ω	½	6R6007	BW-½-68	Blue-Gray-Blk. IF Cathode
15	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
16	47KΩ	½	6R6056	BTS-47K	Yl.-Vi.-Or. Diode Filter
17	10 Meg.	½	6R2109	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
18	470KΩ	½	6R6032	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
19	470KΩ	½	6R6032	BTS-470K	Yl.-Vi.-Yl. Output Grid
20	150Ω	½	6R6373	BW-½-150	Br.-Grn.-Br. Output Cathode
21	1000Ω	1	6K3953	BTA-1000	Br.-Blk.-Red Filter
22	27Ω	½	6R5883	BW-½-27	Red-Vi.-Blk. Surge Limiter
23	220KΩ	½	6R6015	BTS-220K	Red-Red-Yl. Line Isolation

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MOTOROLA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
24	1800Ω	3.1Ω	170Ω	.5Ω	25K486148-A	A-3876	T22S45	A-2928	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	VC IMP.		ST-1131†		†Fabricate new mounting bracket.
25	PM	3.1Ω	50C485152	Mod. P4-X	4A07†	
	CONE DIA.	VC DIA.				
26	4"	9/16"				

R F COILS

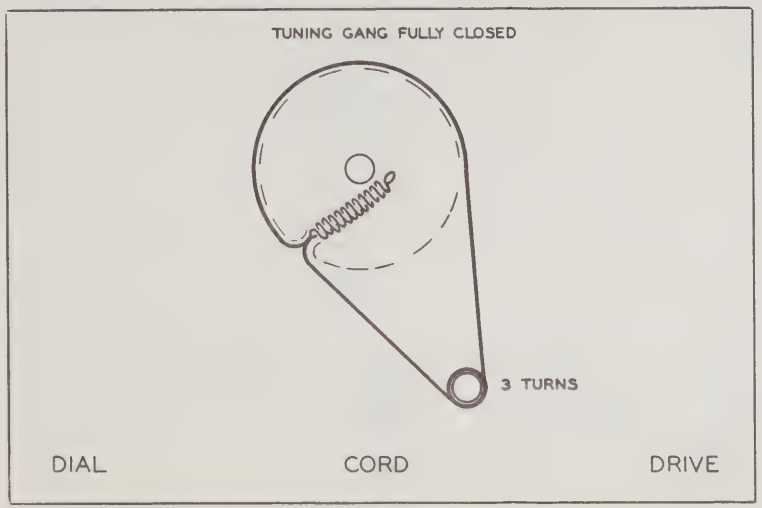
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MOTOROLA PART No.	MEISSNER PART No.	
27	Loop Ant.		3.5Ω	24C485151		
28	Osc. Coil	1.2Ω	12Ω	24A484251	14-1060†	†Add 50 MTFD cap. from high side of tuning cap. to osc. grid.
29	Input IF	15Ω	15.8Ω	24B485171	16-6658	
30	Output IF	14Ω	15Ω	24B485172	16-6660	

DIAL LIGHT

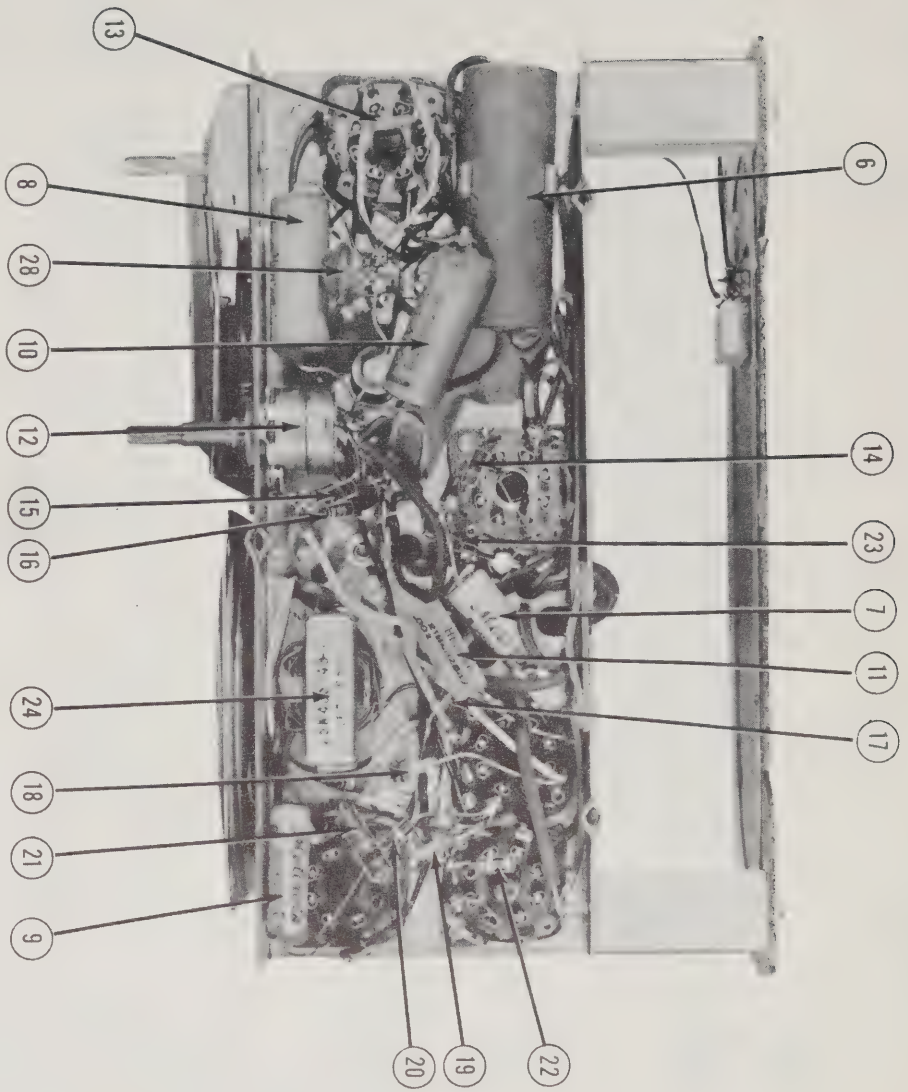
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: MOTOROLA PART No.		INSTALLATION NOTES
31	Bayonet	6-8	0.15	Brown	68X11854		Type #47

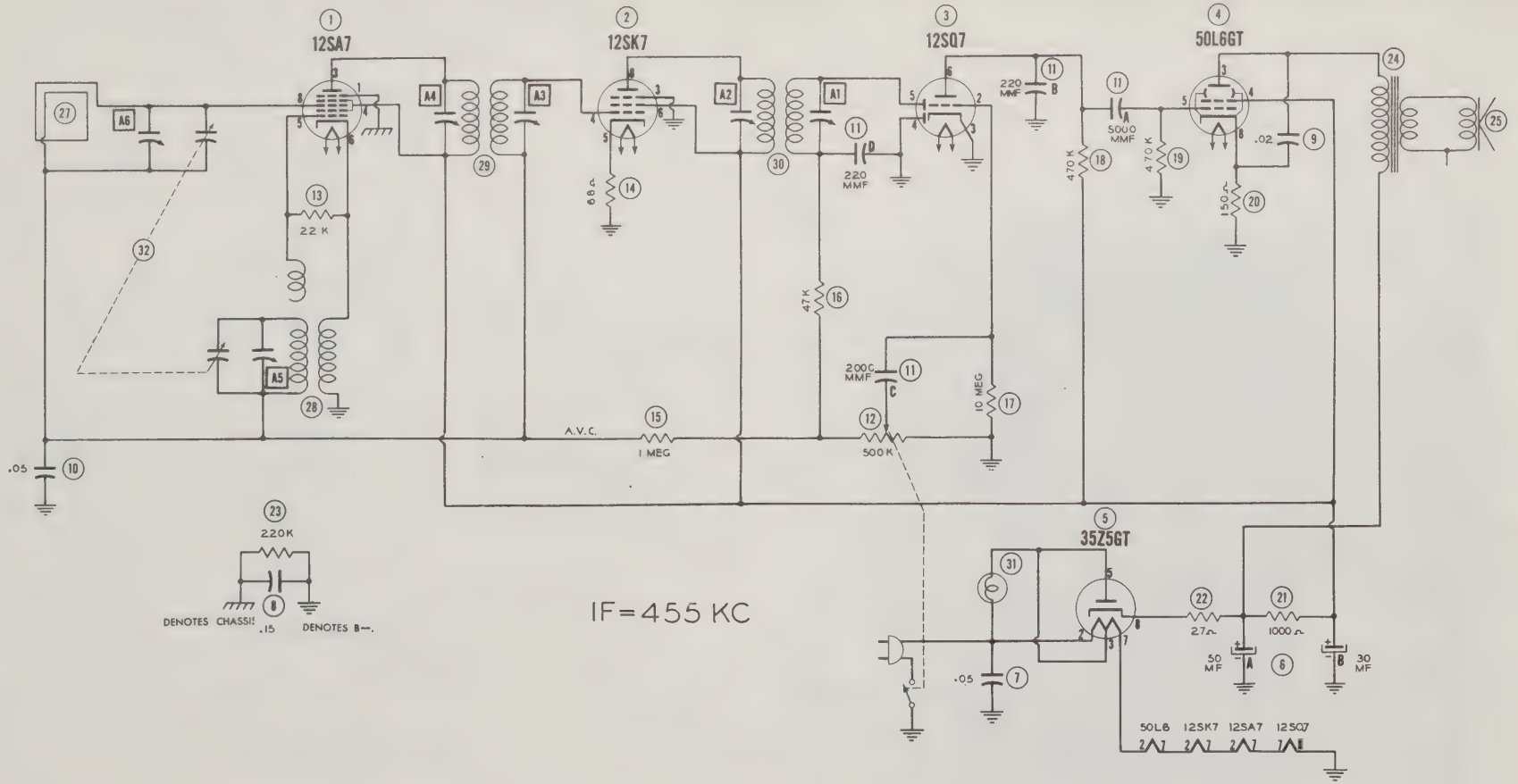
MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
32	2 Gang Var.Cap.	1X485137	(20-374MMF, 14-102MMF)
	Dial Pointer	52B20520	
	Dial Scale	34B485147	
	Cabinet	68D25502	Model 58A11
	"	68K25540	Model 58A12
	Knob	36A470443	Model 58A11
	"	36K485144	Model 58A12



CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0V.	26VAC	100VDC	100VDC	-8VDC§	0V.	13VAC	-.7VDC
2	12SK7	0V.	40VAC	0V.	0V.	.5VDC	100VDC	26VAC	100VDC
3	12SQ7	0V.	-.4VDC	0V.	-.8VDC	0V.	50VDC	13VAC	0V.
4	50L6GT	0V.	90VAC	110VDC	100VDC	0V.	0V.	40VAC	7.5VDC
5	35Z5GT	0V.	117VAC	112VAC	0V.	112VAC	115VDC	90VAC	118VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	220KΩ	25Ω	100KΩ	100KΩ	22KΩ	1.2Ω	13Ω	1.5 Meg.
2	12SK7	220KΩ	38Ω	0Ω	1.5 Meg.	68Ω	100KΩ	25Ω	100KΩ
3	12SQ7	220KΩ	10 Meg.	0Ω	550KΩ	0Ω	470KΩ	13Ω	0Ω
4	50L6GT	INF.	85Ω	100KΩ	100KΩ	47OKΩ	INF.	38Ω	150Ω
5	35Z5GT	INF.	106Ω	100Ω	INF.	100Ω	100KΩ	85Ω	100KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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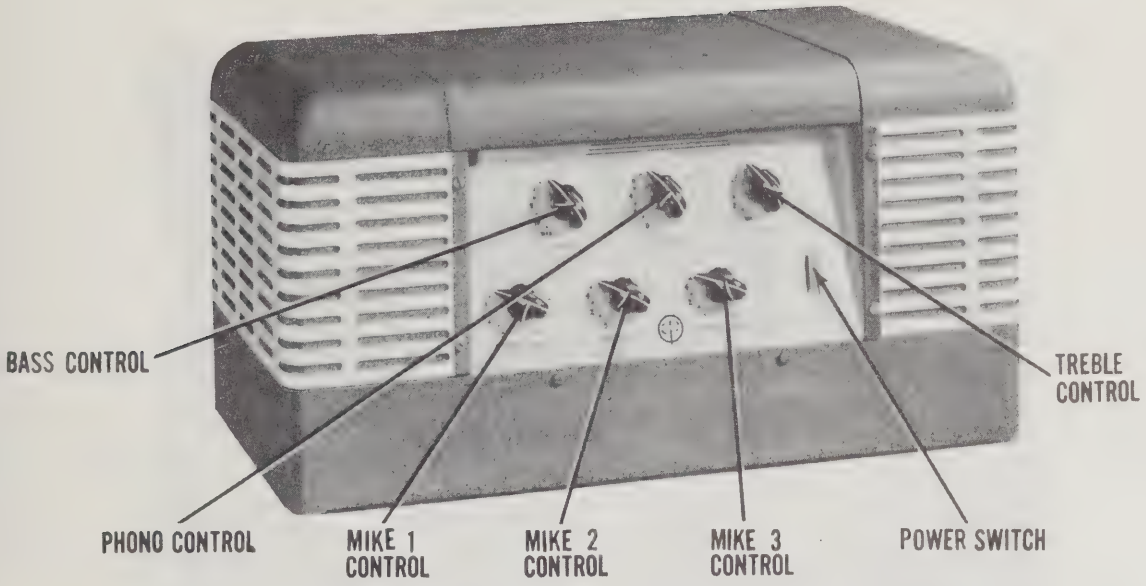
4822-13

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

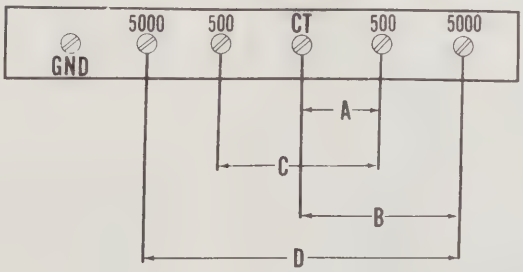
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

OPERADIO
MODEL 1A65



OPERADIO MODEL 1A65

TRADE NAME	Operadio, Model 1A65
MANUFACTURER	Operadio Mfg. Co., St. Charles, Ill.
TYPE SET	AC Operated 4 Channel Audio Amplifier
TUBES (SIX)	Types, 6J7 Mic. 1 Amp., 6J7 Mic. 2 Amp., 6J7 Mic. 3 Amp., 6J7 AF Amp., 6SN7GT Driver Inverter, 6X5GT Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .28 Amp. @ 117 Volts AC



OUTPUT TERMINAL STRIP

Various output impedances can be obtained by the following combination of connections.

1. With jumper wire connected between "ground" and "center" tap:

   A is 125 ohms single ended
   B is 1250 ohms single ended
   C is 500 ohms balanced line
   D is 5000 ohms balanced line

2. With jumper wire between "ground" and "500 ohm" tap:

   C is 500 ohms single ended

3. With jumper wire between "ground" and "5000 ohm" tap:

   D is 5000 ohms single ended.

HOWARD W. SAMS & CO., INC. Indianapolis Indiana

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DATE 12/48-#4822-14 SET #52-FOLDER #14

PARTS LIST AND DESCRIPTIONS

OPERADIO MODEL 1A6S

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: OPERADIO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Mic. 1 Amp.	6J7	6J7	7R	
2	Mic. 2 Amp.	6J7	6J7	7R	
3	Mic. 3 Amp.	6J7	6J7	7R	
4	AF Amp.	6J7	6J7	7R	
5	Driver Inv.	6SN7GT	6SN7GT	8BD	
6	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: OPERADIO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7	40	500	199-2914	AF44J#†	UP2250#	DY-2x30-450#	EL220#†	▲ Filter
8A	30	350	199-2905	AF862J4A*	UP43145C*	DY-403*	EL424*	"
B	20	350						■ Decoupling
C	10	350						"
9	25	25	199-2001-206	PRS25/25	BR202A	M-25-25	TA-25	Cathode Bypass
10	25	25	199-2001-206	PRS25/25	BR202A	M-25-25	TA-25	" "
11	25	25	199-2001-206	PRS25/25	BR202A	M-25-25	TA-25	" "
12	25	25	199-2001-206	PRS25/25	BR202A	M-25-25	TA-25	" "
13	.006	600	199-4030-602	684-006	DT6D6	ST-6-006	TC-26	Line Filter
14	.1	400	199-4021-104	484-.1	DT4P1	ST-4-1	TC-1	Audio Coupling
15	.1	400	199-4021-104	484-.1	DT4P1	ST-4-1	TC-1	" "
16	.1	400	199-4021-104	484-.1	DT4P1	ST-4-1	TC-1	AF Screen Bypass
17	.001	600	199-4030-102	684-001	DT6D1	ST-6-001	TC-21	Tone Compensation
18	.0001	600	199-4030-101	1468-0001	5W5T1	MO.5-31	1FM-31	" "
19	.00025	600		1468-00025	5W5T25	MO.5-325	1FM-325	" "
20	.002	600	199-4030-202	684-002	DT6D2	ST-6-002	TC-22	" "
21	.01	400	199-4020-103	484-01	DT4S1	ST-4-01	TC-11	Audio Coupling
22	.01	400	199-4020-103	484-01	DT4S1	ST-4-01	TC-11	" "
23	.01	400	199-4020-103	484-01	DT4S1	ST-4-01	TC-11	" "
24	.1	400	199-4021-104	484-.1	DT4P1	ST-4-1	TC-1	Screen Bypass
25	.1	400	199-4021-104	484-.1	DT4P1	ST-4-1	TC-1	" "
26	.1	400	199-4021-104	484-.1	DT4P1	ST-4-1	TC-1	" "

*Omit bypass section.
#Parallel sections to obtain desired capacity.
†Install new mtg. socket.

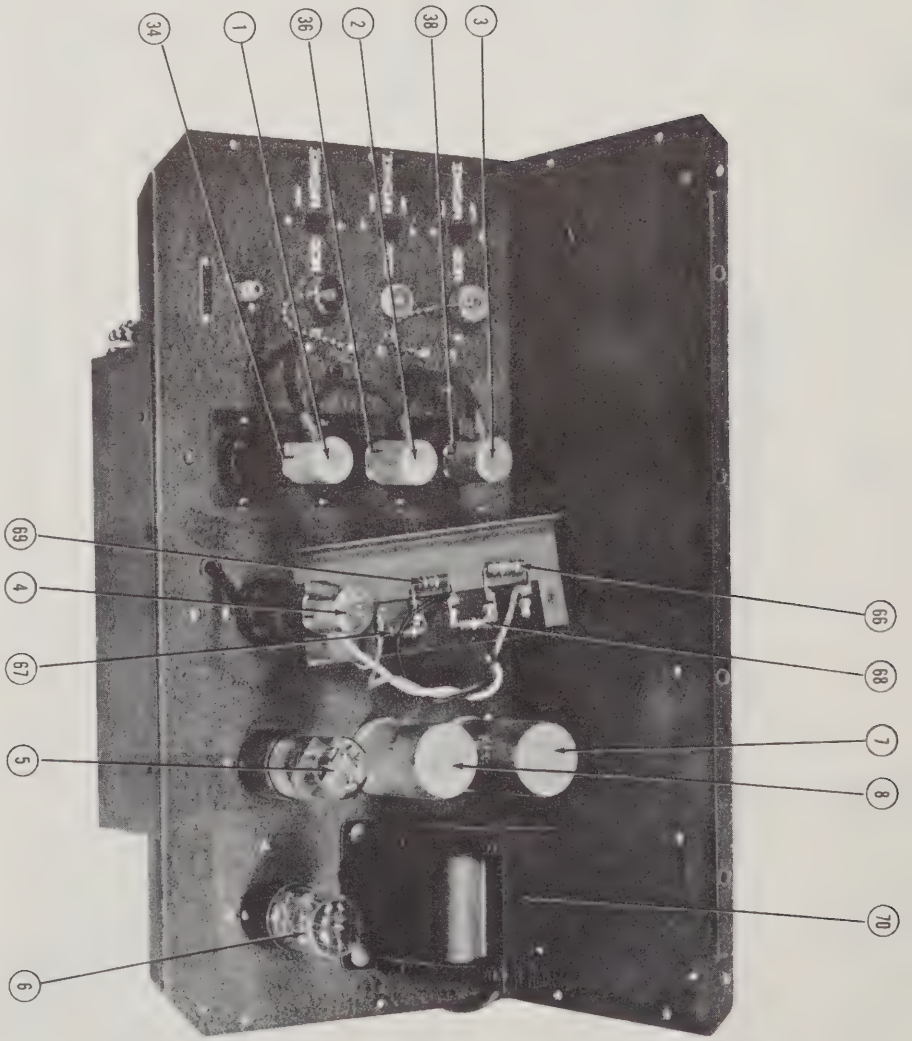
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OPERADIO PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
27A	500KΩ	½	601-3289	D13-133	M-60-Z	Mike 1 Control
B	Shaft		Not Req.	A	Not Req.	Attach to 27A per instructions
28A	500KΩ	½	601-3289	D13-133	M-60-Z	Mike 2 Control
B	Shaft		Not Req.	A	Not Req.	Attach to 28A per instructions
29A	500KΩ	½	601-3289	D13-133	M-60-Z	Mike 3 Control
B	Shaft		Not Req.	A	Not Req.	Attach to 29A per instructions
30A	2.5 Meg.	½	601-3589	D13-140	M-67-Z	Phono Control
B	Shaft		Not Req.	A	Not Req.	Attach to 30A per instructions
31A	300KΩ	½	601-11	D13-130	M-64-Z	Treble Control
B	Shaft		Not Req.	A	Not Req.	Attach to 31A per instructions
32	2.5 Meg.	½	601-10			Bass Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OPERADIO PART No.	IRC PART No.	IDENTIFICATION CODES
33	2.2 Meg.	1	600-0116-225	BTA-2.2 Meg.	Red-Red-Grn. 1st Mic. Amp. Grid
34	68KΩ	½	600-0043-683	BTS-68K	Blue-Gray-Or. " " " "
35	2.2 Meg.	1	600-0116-225	BTA-2.2 Meg.	Red-Red-Grn. 2nd Mic. Amp. Grid
36	68KΩ	½	600-0043-683	BTS-68K	Blue-Gray-Or. " " " "
37	2.2 Meg.	1	600-0116-225	BTA-2.2 Meg.	Red-Red-Grn. 3rd Mic. Amp. Grid
38	68KΩ	½	600-0043-683	BTS-68K	Blue-Gray-Or. " " " "
39	470KΩ	1	600-0116-474	BTA-470K	Yl.-Vi.-Yl. 1st Mic. Amp. Screen

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	OPERADIO PART No.	IRC PART No.	
40	470KΩ	1	600-0116-474	BTA-470K	Yl.-Vl.-Yl. 2nd Mic. Amp. Screen
41	470KΩ	1	600-0116-474	BTA-470K	Yl.-Vl.-Yl. 3rd Mic. Amp. Screen
42	100KΩ	1	600-0116-104	BTA-100K	Br.-Blk.-Yl. 1st Mic. Amp. Plate Load
43	100KΩ	1	600-0116-104	BTA-100K	Br.-Blk.-Yl. 2nd Mic. Amp. Plate Load
44	100KΩ	1	600-0116-104	BTA-100K	Br.-Blk.-Yl. 3rd Mic. Amp. Plate Load
45	1500Ω	1	600-0116-152	BTA-1500	Br.-Grn.-Red 1st Mic. Amp. Cathode
46	1500Ω	1	600-0116-152	BTA-1500	Br.-Grn.-Red 2nd Mic. Amp. Cathode
47	1500Ω	1	600-0116-152	BTA-1500	Br.-Grn.-Red 3rd Mic. Amp. Cathode
48	1 Meg.	1	600-0116-105	BTA-1 Meg.	Br.-Blk.-Grn. Isolation
49	470KΩ	1	600-0116-474	BTA-470K	Yl.-Vl.-Yl. "
50	470KΩ	1	600-0116-474	BTA-470K	Yl.-Vl.-Yl. "
51	470KΩ	1	600-0116-474	BTA-470K	Yl.-Vl.-Yl. "
52	470KΩ	1	600-0116-474	BTA-470K	Yl.-Vl.-Yl. Tone Compensation
53	270KΩ	1	600-0116-274	BTA-270K	Red-Vl.-Yl. " "
54	1000Ω	1	600-0116-102	BTA-1000	Br.-Blk.-Red AF Cathode
55	470KΩ	1	600-0116-474	BTA-470K	Yl.-Vl.-Yl. AF Screen
56	100KΩ	1	600-0116-104	BTA-100K	Br.-Blk.-Yl. AF Plate Load
57	560KΩ	1	600-0116-564	BTA-560K	Grn.-Blue-Yl. Driver Grid
58	470Ω	1	600-0116-471	BTA-470	Yl.-Vl.-Br. Driver Cathode
59	47KΩ	1	600-0116-473	BTA-47K	Yl.-Vl.-Or. Inverter Grid
60	100KΩ	1	600-0116-104	BTA-100K	Br.-Blk.-Yl. AF Divider Network
61	10KΩ	1	600-0116-103	BTA-10K	Br.-Blk.-Or. " " "
62	100KΩ	1	600-0116-104	BTA-100K	Br.-Blk.-Yl. " " "
63	10KΩ	10	600-1011-103	AB-10K	Filter
64	10KΩ	1	600-0116-103	BTA-10K	Br.-Blk.-Or. Decoupling
65	25KΩ	1	600-0116-253	BTA-27K	Red-Grn.-Or. "
66	2700Ω	1	600-0116-272	BTA-2700	Red-Vl.-Red Impedance Matching Network
67	2700Ω	1	600-0116-272	BTA-2700	Red-Vl.-Red " " "
68	270Ω	1	600-0116-271	BW-1-270	Red-Vl.-Br. " " "
69	270Ω	1	600-0116-271	BW-1-270	Red-Vl.-Br. " " "

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	OPERADIO PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
70	117V AC @ .28A	590V CT @ .017A	6.8V CT @ 2.8A		710-4030	P-4067§‡	T22R30‡	P-3147‡

‡Drill new mounting holes.
§Add series resistor to reduce plate voltage.

TRANSFORMER (DRIVER)

ITEM No.	RATING			REPLACEMENT DATA				INSTALLATION NOTES
	TURNS RATIO PRI.TO1/2 SEC.	DC RES. PRI.	DC RES. SEC.	OPERADIO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
71	4.55 to 1	850Ω CT	117Ω CT	712-8335	A-4773**‡	T20D79‡	A-3123‡	‡Drill new mounting holes. **Connect in reverse.

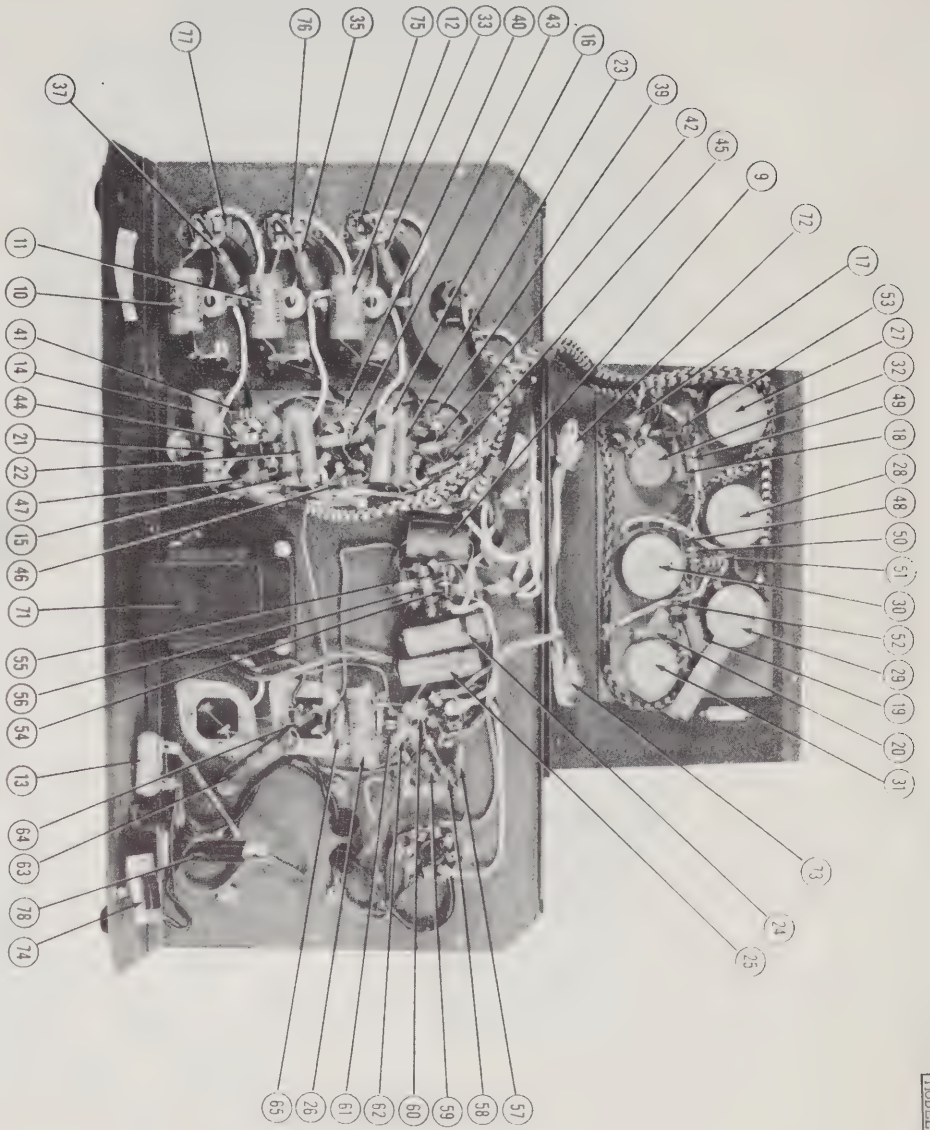
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					OPERADIO PART No.		
72	Bayonet	7.5	0.2	White			Type #51
73	"	7.5	0.2	"			" "

MISCELLANEOUS

ITEM No.	PART NAME	OPERADIO PART No.	NOTES
74	Switch	680-30	On-Off
75	"	680-35	Mic. 1 Input Selector
76	"	680-35	Mic. 2 Input Selector
77	"	680-35	Mic. 3 Input Selector
78	Fuse	320-835-0200	2 Amp.

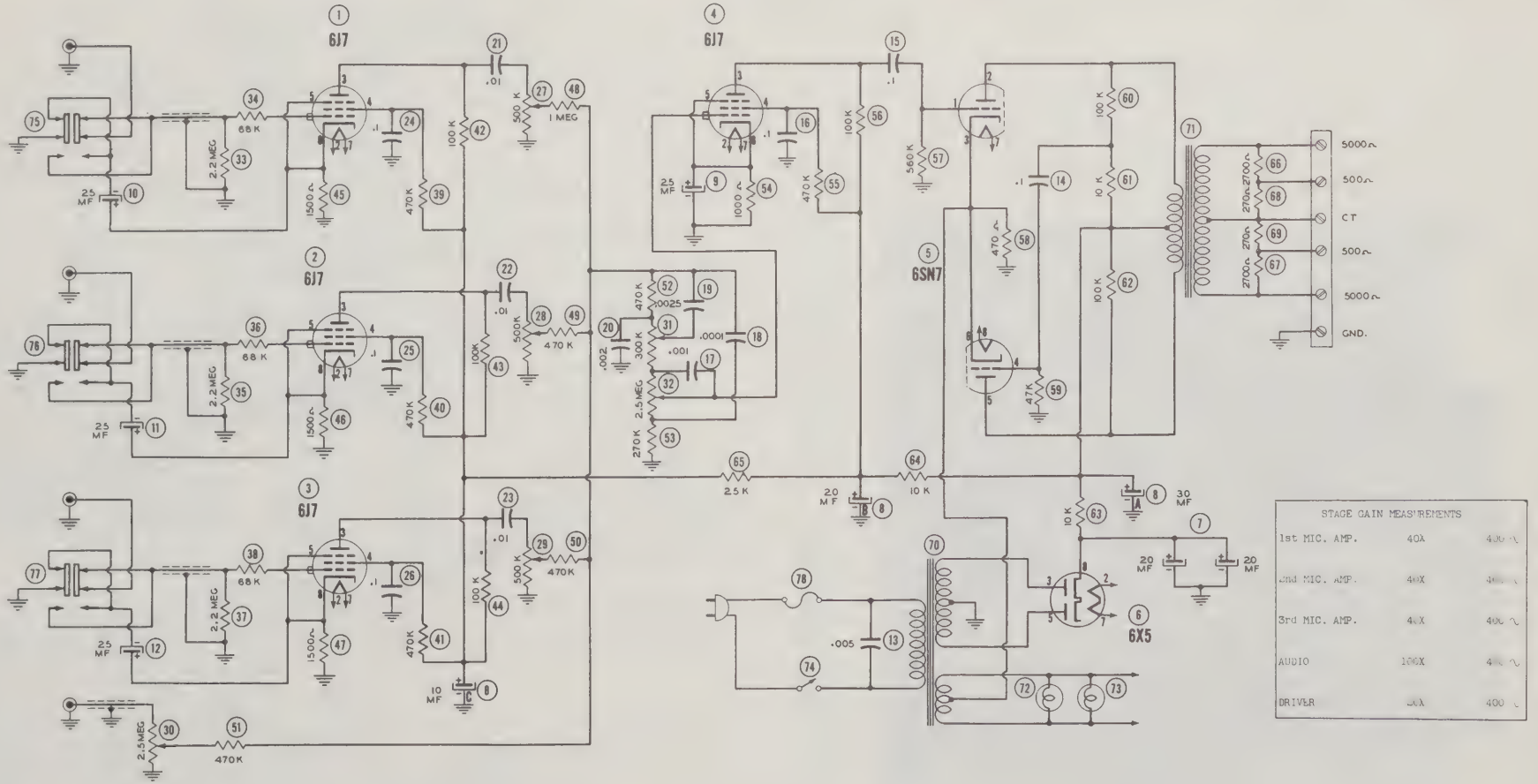
CHASSIS—BOTTOM VIEW



OPERADIO MODEL 1A65

DATE 12/48-#4822-14 SET #52-FOLDER #14

OPERADIO MODEL 1A65



STAGE GAIN MEASUREMENTS

1st MIC. AMP.	40X	400 ∿
2nd MIC. AMP.	40X	400 ∿
3rd MIC. AMP.	40X	400 ∿
AUDIO	100X	400 ∿
DRIVER	30X	400 ∿

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6J7	0V.	6.4VDC	45VDC	30VDC	1VDC	95VDC	6.4VDC	1VDC	0V.
2	6J7	0V.	6.4VDC	45VDC	30VDC	1VDC	95VDC	6.4VDC	1VDC	0V.
3	6J7	0V.	6.4VDC	45VDC	30VDC	1VDC	95VDC	6.4VDC	1VDC	0V.
4	6J7	0V.	6.4VDC	60VDC	40VDC	1.2VDC	145VDC	6.4VDC	1.2VDC	0V.
5	6SN7GT	.4VDC	180VDC	6.4VDC	0V.	180VDC	6.4VDC	6.4VDC	6.4VDC	-
6	6X5GT	0V.	6.4VDC	295VAC	0V.	295VAC	0V.	6.4VDC	340VDC	-

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6J7	0Ω	470Ω	220KΩ	600KΩ	1.5KΩ	130KΩ	470Ω	1.5KΩ	2.2 Meg.
2	6J7	0Ω	470Ω	220KΩ	600KΩ	1.5KΩ	130KΩ	470Ω	1.5KΩ	2.2 Meg.
3	6J7	0Ω	470Ω	220KΩ	600KΩ	1.5KΩ	130KΩ	470Ω	1.5KΩ	2.2 Meg.
4	6J7	0Ω	470Ω	200KΩ	560KΩ	1KΩ	90KΩ	1KΩ	1KΩ	270K
5	6SN7GT	560KΩ	90KΩ	470Ω	47KΩ	90KΩ	470Ω	470Ω	470Ω	-
6	6X5GT	INF.	450Ω	135Ω	INF.	135Ω	INF.	470Ω	80KΩ	-

NOTE-VOLTAGE BETWEEN FILAMENT PINS 6.8V AC

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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4822-14

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

PHILCO MODEL
49-905

PHILCO MODEL
49-905

PHILCO MODEL 49-905

TRADE NAME	Philco, Model 49-905
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPSE SET	AC-DC Operated AM-FM Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 12AT7 FM-AM Converter, 6BA6 FM 1st IF Amp., 12AU6 FM 2nd, AM 1st IF Amp., 19T8 FM-AM Det.-AVC-AF, 35C5 Power Output, 35W4 Rectifier.
POWER SUPPLY	105-120 Volts AC
RATING	.23 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1620KC FREQ. MOD. 88 - 108MC

HOWARD W. SAMS & CO., INC. **Indianapolis Indiana**

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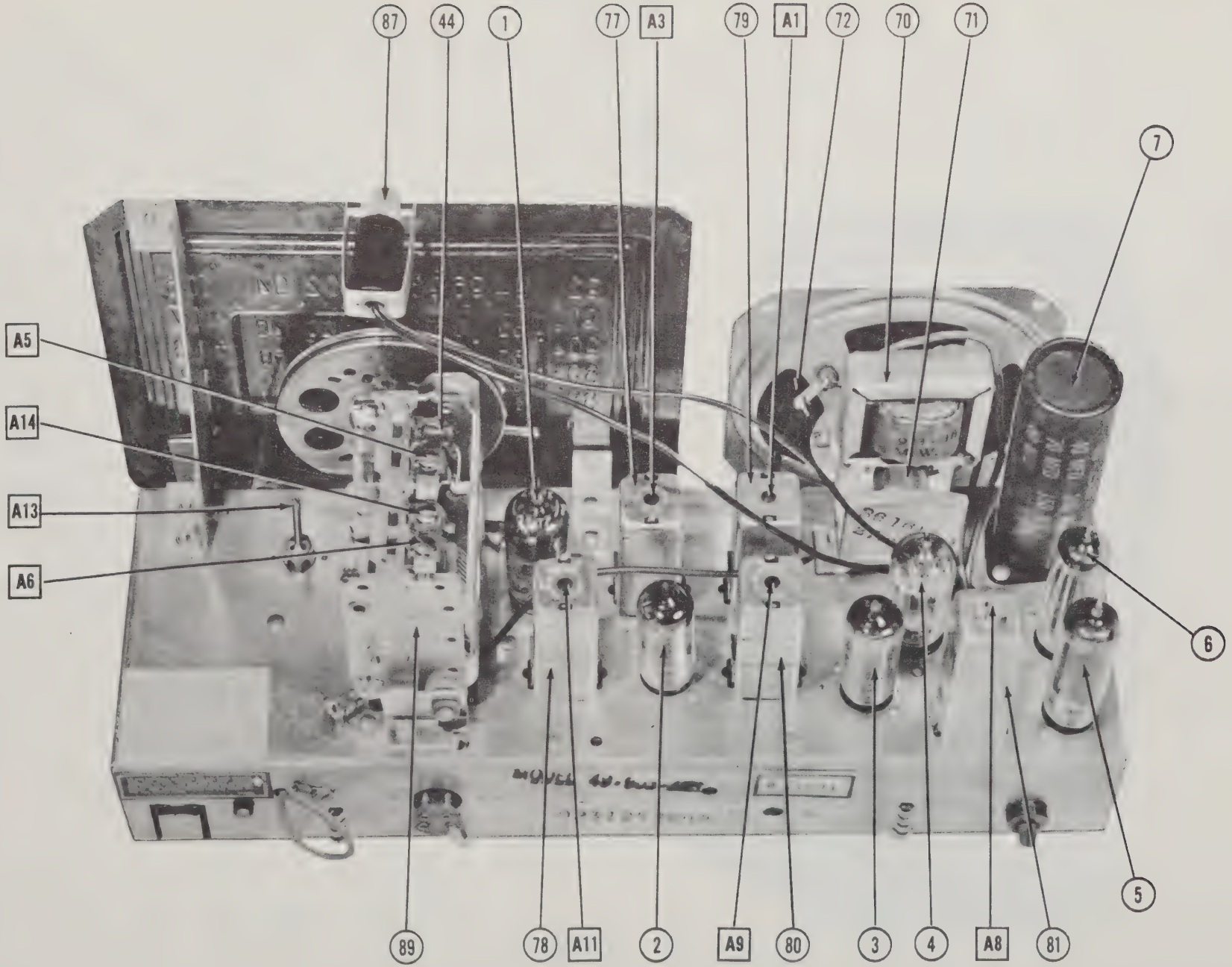
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78
A11
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A8
81

PHILCO MODEL
49-905

PAGE 3

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
1	FM-AM Converter	12AT7	12AT7		
2	FM 1st IF Amp.	6BH6	6BH6		
3	FM 2nd AM 1st IF Amp.	12AU6	12AU6	7BK	
4	FM-AM Det.-AVC-AF	19T8	19T8		
5	Power Output	35C5	35C5		
6	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	
7A	40	150	30-2568-10	AF888D*	UP8415	DY-8040-150	D14842	Filter
B	70	150						"
C	40	150		PRS150/30	BR4015	M-40-150	UT-401	"
8	25	25	45-3001	PRS25/25	BR252A	M-25-25	TA-25	Cathode Bypass
9	2	50	30-2417-7		BR245			Stabalizing Cap.
10	.04	400	45-3500	484-05	GT6S4	ST-6-04	TC-14	Line Filter
11	.03	400		484-03	GT4S3	ST-4-03	72P1	Line Isolation-Note 1
12	.01	400	61-0120	484-01	GT4S1	ST-4-01	TC-11	Fil. Bypass
13	.006	400	30-4504	484-006	GT6D6	ST-6-006	TC-26	Output Plate Bypass
14	.006	400	30-4504	484-006	GT6D6	ST-6-006	TC-26	Audio Coupling
15	.02	400	30-4594	484-02	GT4S2	ST-4-02	TC-12	" "
16	.01	400	61-0120	484-01	GT4S1	ST-4-01	TC-11	RF Bypass
17	.01	400	61-0120	484-01	GT4S1	ST-4-01	TC-11	Diode Load Cap.
18	.003	600		684-003	GT6D3	ST-6-003	TC-23	2nd IF Decoupling
19	.01	400	61-0120	484-01	GT4S1	ST-4-01	TC-11	Fil. Bypass
20	.01	400	61-0120	484-01	GT4S1	ST-4-01	TC-11	AVC Filter
21	.01	400	61-0120	484-01	GT4S1	ST-4-01	TC-11	Decoupling
22	.01	400	61-0120	484-01	GT4S1	ST-4-01	TC-11	AVC Filter
23	.006	400	30-4504	484-006	GT6D6	ST-6-006	TC-26	1st IF Screen Bypass
24	.01	400	61-0120	484-01	GT4S1	ST-4-01	TC-11	Osc. Tuning Cap. Iso.
25	.01	400	61-0120	484-01	GT4S1	ST-4-01	TC-11	RF Bypass
26	.03	400		484-03	GT4S3	ST-4-03	TC-13	" "
27	.01	400	61-0120	484-01	GT4S1	ST-4-01	TC-11	2nd IF Cath.Byp.-Note 1
28	680	300	60-10685401	1468-00075	1W5T7	MO.3-37	1FM-37	AF Plate Bypass-Cer.
29	100	300	62-110001001	1468-0001	5W5T1	MO.5-31	1FM-31	RF Bypass "
30	100	300	62-110001001	1468-0001	5W5T1	MO.5-31	1FM-31	" " "
31	100	300	62-110001001	1468-0001	5W5T1	MO.5-31	1FM-31	Rectifier Bypass "
32	100	300	62-110001001	1468-0001	5W5T1	MO.5-31	1FM-31	RF Bypass "
33	100	300	62-110001001	1468-0001	5W5T1	MO.5-31	1FM-31	Diode RF Filter "
34	100	300	62-110001001	1468-0001	5W5T1	MO.5-31	1FM-31	RF Bypass "
35	220	300	62-122001001	1468-00025	5W5T25	MO.5-325	1FM-325	Conv. Decoupling-Cer. Note 1
36	680	300	60-10685401	1468-00075	1W5T7	MO.3-37	1FM-37	Conv. Cath. Bypass-Cer.
37	100	300	62-110001001	1468-0001	5W5T1	MO.5-31	1FM-31	Osc. Coupling "
38	220	300	62-122001001	1468-00025	5W5T25	MO.5-325	1FM-325	Osc. Grid Cap. "
39	100	300	62-110001001	1468-0001	5W5T1	MO.5-31	1FM-31	FM Osc. Feedback "
40	220	300	62-122001001	1468-00025	5W5T25	MO.5-325	1FM-325	FM-RF Coupling "
41	100	300	62-110001001	1468-0001	5W5T1	MO.5-31	1FM-31	FM Line Ant. Coup.- " Note 1
42	220	300	62-122001001	1468-00025	5W5T25	MO.5-325	1FM-325	RF Coupling "
43	5	300		1469-000005	5R5V5	MO5.5-55	MS-55	Fixed Trimmer "
44	68	500						" " -Note 1 "
45	100	300	62-110001001	1468-0001	5W5T1	MO.5-31	1FM-31	Fil. Bypass -Note 1 "
46	100	300	62-110001001	1468-0001	5W5T1	MO.5-31	1FM-31	RF Bypass -Note 1 "

*Parallel sections to obtain desired capacity.
Note 1-Not used in all models.

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	PHILCO PART No.	MEISSNER PART No.	
73	Loop Ant.		3.5Ω	32-4052-21		
74	Ant.Coil FM		0Ω	32-4018-8		
75	Osc. " AM		7Ω	32-4153-1	14-1060	
76	" " FM		0Ω	32-4018-7		
77	1st IF AM	20Ω‡	20Ω	32-4258		‡Plate connection tapped at 0Ω
78	1st IF FM	1Ω	1.2Ω	32-4257		
79	2nd IF AM	15Ω	15Ω	32-4240		
80	" " FM	1Ω	1Ω	32-4257-1		
81	FM Det.Tran.	3.6Ω	.5Ω	32-4310		
82	FM Cath.Chk.		0Ω	32-4111		
83	Fil. Choke		0Ω	32-4111		
84	" "		0Ω	32-4111		
85	Isolation Choke		.5Ω			Not used in all models.
86	Conv. Plate Choke			32-4111		Not used in all models.

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					PHILCO PART No.		
87	Bayonet	6-8	0.15	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
88	Switch	42-1870	Band
89	Tuning Gang	31-2733	AM (22-499MMF, 29-197MMF)
A13	Trimmer	31-6495-2	FM Osc. Adj.
	Cabinet	10714	
	Dial	54-5011	
	Dial Pointer	54-4509	
	Knob	54-4527-1	Tuning
	"	54-4527-4	Band Switch
	"	54-4527	Volume, On-Off

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	
47A	500KΩ	½	45-5019	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 47A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	
48	1 Meg.	½	66-5103340	BTS-1 Meg.	Br.-Blk.-Grn. Conv. Grid
49	22KΩ	½	66-3233340	BTS-22K	Red-Red-Or. " "
50	1500Ω	½	66-2153340	BTS-1500	Br.-Grn.-Red Conv. Cathode
51	22KΩ	½	66-3223340	BTS-22K	Red-Red-Or. Osc. Grid
52	8200Ω	½	66-2823340	BTS-8200	Gray-Red-Red Osc. Plate
53	1 Meg.	½	66-5103340	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
54	1000Ω	½	66-2103340	BTS-1000	Br.-Blk.-Red 1st IF Decoupling
55	1000Ω	½	66-2103340	BTS-1000	Br.-Blk.-Red Decoupling
56	1 Meg.	½	66-5103340	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
57	68Ω	½	66-0683340		Blue-Gray-Blk. Parasitic Suppressor
58	68Ω	½	66-0683340		Blue-Gray-Blk. 2nd IF Cathode-See Note
59	1000Ω	½	66-2103340	BTS-1000	Br.-Blk.-Red 2nd IF Decoupling
60	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. De-emphasis
61	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. Diode Filter
62	1 Meg.	½	66-5103340	BTS-1 Meg.	Br.-Blk.-Grn. Diode Load
63	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. Ratio Det. Diode Load
64	10 Meg.	½	66-6103340	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
65	470KΩ	½	66-4473340	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
66	470KΩ	½	66-4473340	BTS-470K	Yl.-Vi.-Yl. Output Grid
67	150Ω	½	66-1153340	BW-½-150	Br.-Grn.-Br. Output Cathode
68	470Ω	1	66-1474340	BTA-470	Yl.-Vi.-Br. Filter
69	220Ω	1	66-1224340	BW-1-220	Red-Red-Br. "

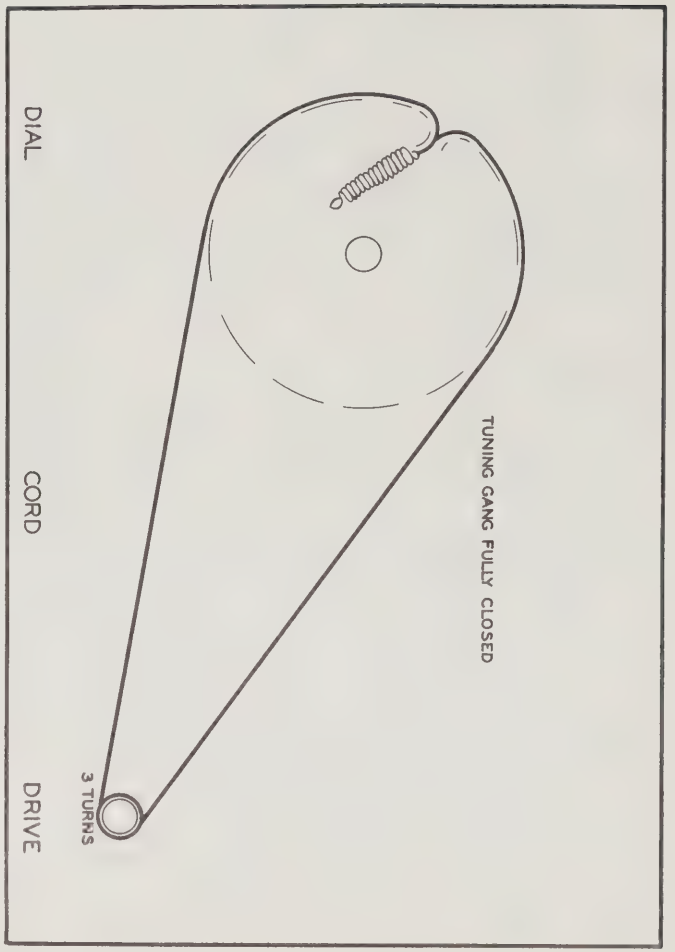
Note-Not used in all models.

TRANSFORMER (OUTPUT)

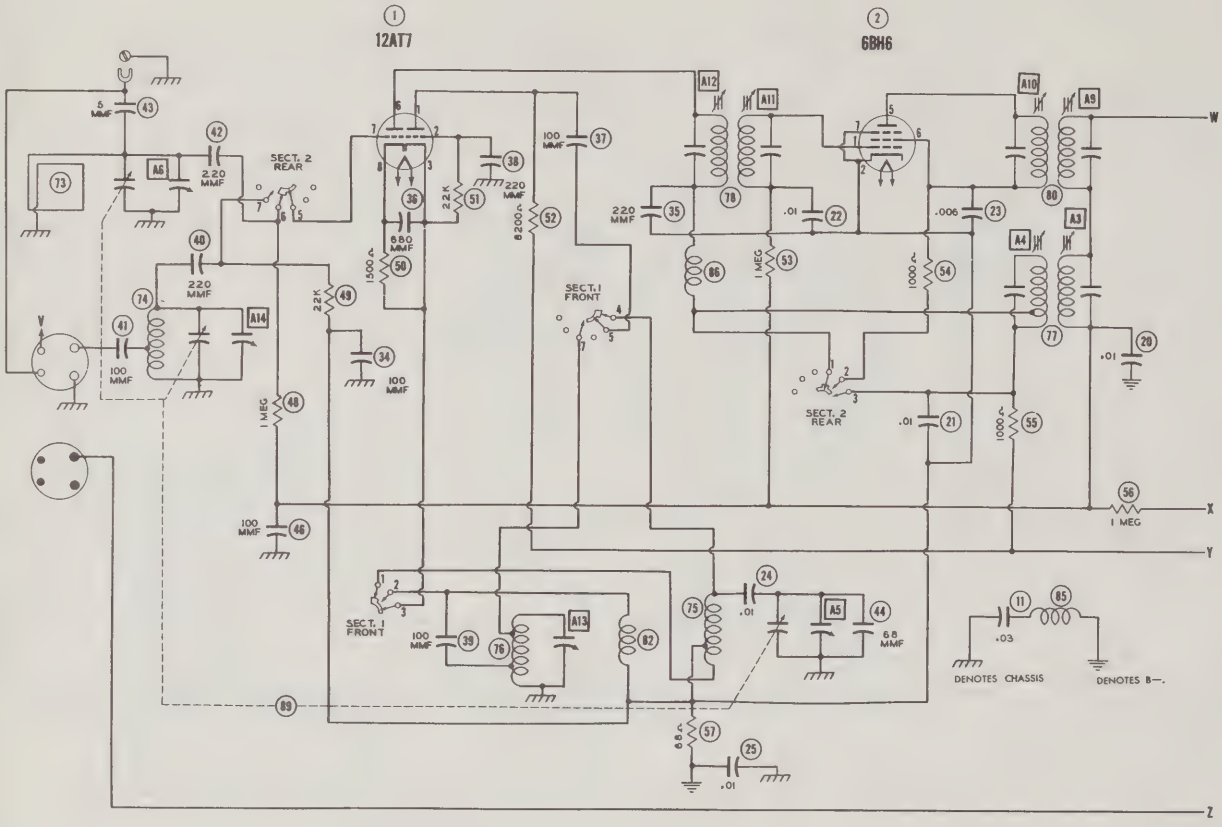
ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PHILCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
70	1800Ω	4.0Ω	185Ω	.7Ω	Part of 36-1614-3	A-3876#	T22S45#	A-2928#	#Bend mounting tabs down, file out slots and mount on original brackets.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			PHILCO PART No.	JENSEN PART No.	QUAM PART No.	
71	FIELD	VC IMP.	36-1614-3	ST-113† Mod. P4-X	4A07†	†Fabricate new mounting bracket.
	PM	4.0Ω				
72	CONE DIA.	VC DIA.				
	4"	9/16"				



DATE 12/48-#4822-16 SET #52-FOLDER #16



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1A	12AT7	85VDC	-.2VDC	.3VDC	20VAC	32VAC	110VDC	-.2VDC	2.2VDC	23VAC
‡ 1B	12AT7	75VDC	-.8VDC**	.6VDC	20VAC	32VAC	100VDC	.3VDC	2.2VDC	23VAC
2A	6BH6	-.3VDC	.3VDC	32VAC	38VAC	0V.	0V.	.3VDC	-	-
‡ 2B	6BH6	-.1VDC	.6VDC	32VAC	38VAC	100VDC	100VDC	.6VDC	-	-
3	12AU6	-.3VDC	0V.	36VAC	50VAC	105VDC	105VDC	.3VDC	-	-
4A	19T8	-.6VDC	-1.1VDC	-.6VDC	0V.	20VAC	-.8VDC	0V.	-.9VDC	50VDC
‡ 4B	19T8	-.6VDC	-1.1VDC	-.6VDC	0V.	20VAC	-.8VDC	0V.	-.9VDC	50VDC
5	35C5	6.5VDC	0V.	85VAC	50VAC	0V.	110VDC	108VDC	-	-
6	35W4	0V.	0V.	85VAC	117VAC	115VAC	115VAC	125VDC	-	-

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1A	12AT7	110KΩ	22KΩ	68Ω	17Ω	25Ω	100KΩ	3 Meg.	1.5KΩ	24Ω
‡ 1B	12AT7	110KΩ	22KΩ	68Ω	17Ω	28Ω	100KΩ	20KΩ	1.5KΩ	24Ω
2A	6BH6	3 Meg.	68Ω	29Ω	36Ω	INF.	INF.	68Ω	-	-
‡ 2B	6BH6	3 Meg.	68Ω	29Ω	36Ω	100KΩ	100KΩ	68Ω	-	-
3	12AU6	2 Meg.	0Ω	36Ω	45Ω	100KΩ	100KΩ	68Ω	-	-
4A	19T8	INF.	47KΩ	INF.	0Ω	17Ω	360KΩ	0Ω	10 Meg.	570KΩ
‡ 4B	19T8	550KΩ	47KΩ	550KΩ	0Ω	17Ω	1 Meg.	0Ω	10 Meg.	570KΩ
5	35C5	150Ω	470KΩ	85Ω	48Ω	470KΩ	100KΩ	100KΩ	-	-
6	35W4	0Ω	INF.	85Ω	112Ω	110Ω	110Ω	100KΩ	-	-

‡TAKEN WITH VACUUM TUBE VOLTMETER

**VOLTAGE READ BETWEEN PIN 2 AND JUNCTION OF R401 AND B-.

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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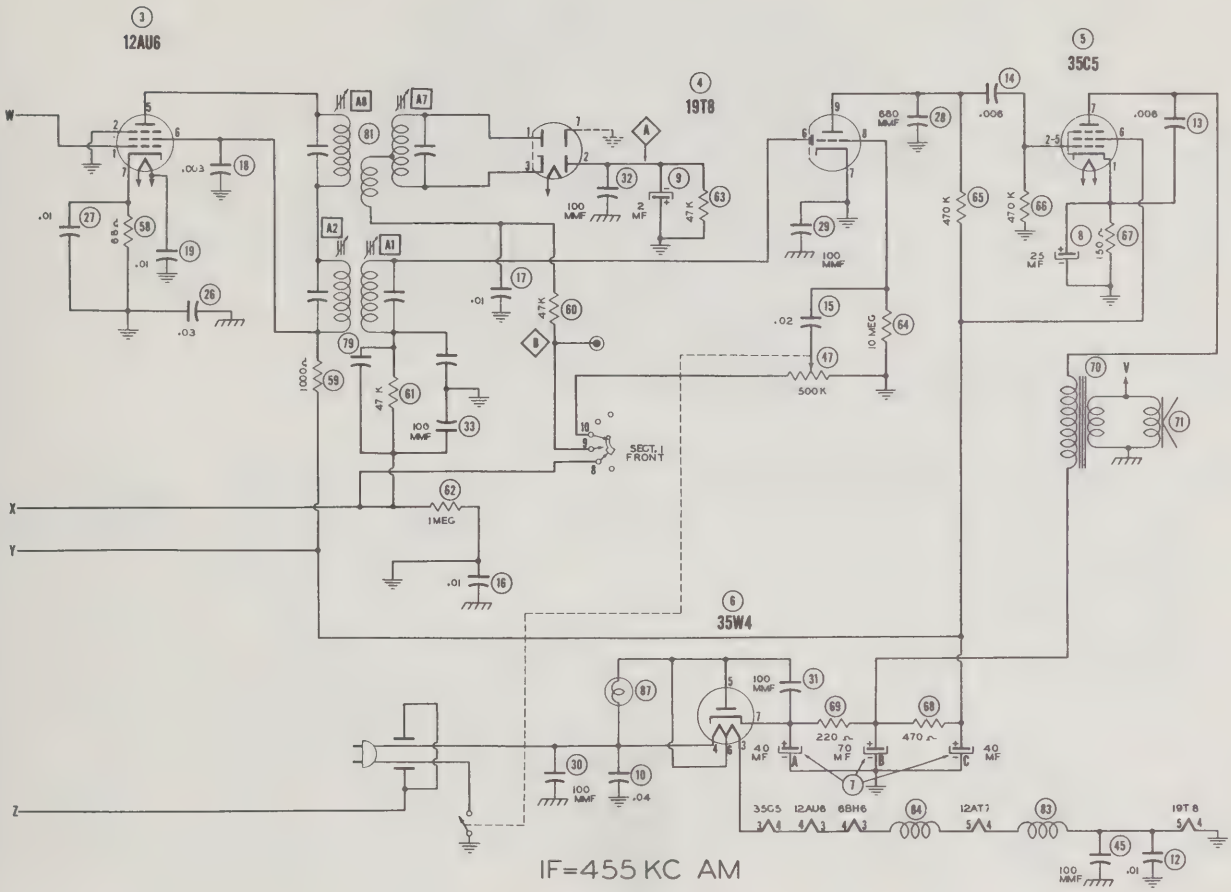

IF=455 KC AM

IF=9.1 MC FM

STAGE GAIN MEASUREMENTS		
CONVERSION GAIN	15X	600KC 455KC
INPUT IF TRANSFORMER	3X	455KC
IF TUBE	150X	455KC
OUTPUT IF TRANSFORMER	.4X	455KC
AUDIO	35X	400 ∿
OUTPUT	15X	400 ∿

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Before FM alignment is attempted, all AM alignment should be completed.
Allow signal generator and receiver to warm up for at least fifteen minutes before beginning alignment.
To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial.

AM ALIGNMENT

Make all AM alignment with loop antenna connected to receiver.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD	High side to Pin 7 (grid) of 12AT7. Low side to B-.	455KC	BC (Counter-clock-wise)	Tuning cap. fully closed	Across voice coil	A1,A2, A3,A4	Adjust for maximum output in order given. If isolation transformer is not used, reduce dummy antenna to .001 MFD to reduce hum modulation.
2		Loop	1600KC	"	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust A5 for maximum output.
3		"	1500KC	"	Tune for maximum output.	"	A6	Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR, VTVM & OUTPUT METER

Output of signal generator should be attenuated during alignment to maintain an approximate meter deflection of 10 volts.
IF VTVM is not available, a 20,000Ω/volt DC voltmeter may be used.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4	.1 MFD.	High side to Pin 1 (grid) of 6BH6.	9.1MC (400∿ modulation	FM (Clock-wise)	Tuning cap. fully closed	DC probe to Point (A). Common to B-.	A7,A8, A9,A10	Adjust for maximum deflection and repeat. After adjustments are satisfactory do not change any of them except for A7 in Step 6.
5	.1 MFD.	High side to Pin 7 (grid) of 12AT7. Low side to B-.	"	"	"	"	A11,A12	Adjust for maximum deflection. After adjustments are satisfactory do not change either of them.
						OUTPUT METER		
6	.1 MFD.	High side to Pin 7 (grid) of 12AT7. Low side to B-.	9.1MC (400∿ modulation	FM (Clock-wise)	Tuning cap. fully closed	Across voice coil.	A7	Adjust for minimum output. Make this adjustment very carefully as misalignment will result in distortion on FM reception. Continue with FM RF Alignment in Step 7.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4	.01 MFD.	High side to grid of 6BH6 1st IF Tube 2. Low side to B-.	9.1MC (Freq. Mod.)	FM (Clock-wise)	Tuning cap. fully closed	Vertical input to Point (A). Ground to B-.	A8,A9, A10	Disconnect 2 MFD cap. (9) from Point (A). Adjust A8, A9 & A10 for maximum amplitude, symmetry and coincidence of pattern per Fig. 1. After adjustments are satisfactory do not change.
5	.01 MFD.	High side to Pin 7 (grid) of 12AT7. Low side to B-.	"	"	"	"	A11, A12	Adjust for maximum amplitude, symmetry and coincidence of pattern per Fig. 1. After adjustments are satisfactory do not change. Reconnect cap. (9) to Point (A).
6	.01 MFD	High side to grid of 6BH6 1st IF Tube 2. Low side to B-.	"	"	"	Vertical input to Point (A). Ground to B-.	A7	Adjust for crossover of diagonal lines occurring at center of pattern per Fig. 2. Continue with FM RF Alignment in Step 7.

FM RF ALIGNMENT

The FM Coils may be checked by the use of a tuning wand. If insertion of powdered iron end of wand increases deflection, compress the coil slightly. If insertion of the brass end of wand increases deflection, spread the coil slightly. Correct adjustment is indicated when insertion of either end of the wand causes a decrease in deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7	Direct	High side to Pin 1 of FM ant. socket. Low side to chassis.	105MC (400 ∿ Amp. Mod.)	FM (Clock-wise)	105MC	DC probe to Point (A). Common to B-.	A13	Adjust for maximum deflection.
8	"	"	"	"	Tune for maximum deflection.	"	A14	Rock tuning cap. and adjust for maximum deflection.
9	"	"	92MC	"	92MC	"	FM Osc Coil (76) FM Ant. Coil (74).	Adjust FM Osc. and Ant. Coils per prealignment instructions. Adjustment of coils will change adjustments of A13 and A14 therefore Steps 7, 8 & 9 should be repeated until no further improvement can be made, making Step 8 last step.

FIG. 1

FIG. 2

RCA (VICTOR) MODELS 8X521
(RC-1066), 8X522 (RC-1066A)

RCA (VICTOR), MODEL 8X521

TRADE NAME	RCA (Victor), Models 8X521 (Ch. RC-1066), 8X522 (Ch. RC-1066A)
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, N.J.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 50C5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	540-1600KC RATING .23 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis.

IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use freq. modulated signal with 40KC sweep and 60 ∿ modulation. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
1	.01 MFD.	High side to Pin 1 (grid) of 12BA6. Low side to chassis.	455KC (Freq. Mod.)	Tuning cap. fully open.	Vertical input to Point (A). Ground to chassis.	A1,A2	Adjust for maximum amplitude, symmetry and coincidence of pattern per Fig. 1.
2	.01 MFD.	High side to large stator of tuning cap. Low side to chassis.	"	"	"	A3,A4	Adjust for maximum amplitude, symmetry and coincidence of pattern per Fig. 1. Continue with RF Alignment in Step 3.

IF ALIGNMENT USING AM SIGNAL GENERATOR & OUTPUT METER

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 1 (grid) of 12BA6. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2	.1 MFD.	High side to large stator of tuning cap. Low side to chassis.	"	"	"	A3,A4	Adjust for maximum output. Continue with RF Alignment in Step 3.

RF ALIGNMENT

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
3		Loop	1600KC	Tuning cap. fully open.	Across voice coil	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver.
4		"	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.
5		"	600KC	"	"	A7	Rock tuning cap. and adjust for maximum output. Repeat Steps 3, 4 & 5 until no further improvement can be made.

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DATE 12/48-#4822-17 SET #52-FOLDER #17

PARTS LIST AND DESCRIPTIONS

RCA (VICTOR)
MODEL 8X521

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		RCA PART No.	STANDARD REPLACEMENT		
1	Converter	12BE6	12BE6	7CH	
2	IF Amp.	12BA6	12BA6	7BK	
3	2nd Det.-AVC-AF	12AT6	12AT6	7BT	
4	Power Output	50C5	50C5		
5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	RCA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	
6A	30	150	73500	PRSA150/30-50	EDL5315	DSB-5030-150	TA-530	Filter-Green
B	50	150						" -Red
7	.05	400	70615	484-05	GT4S5	ST-4-05	TC-15	Rectifier Bypass
8	.1	400	70617	484-.1	GT4P1	ST-4-1	72P2	Line Isolation
9	.02	400	70611	484-02	GT4S2	ST-4-02	TC-12	Output Plate Bypass
10	.002	600	70601	684-002	GT6D2	ST-6-002	TC-22	Audio Coupling
11	.02	400	70611	484-02	GT4S2	ST-4-02	TC-12	" "
12	.05	400	70615	484-05	GT4S5	ST-4-05	TC-15	AVC Filter
13	330	500	72571	1468-00035	5W5T3	MO.5-33	1FM-335	AF Plate Bypass
14	150	300	73501	1468-00015	5W5T15	MO.5-315	1FM-315	RF Bypass
15	56	300	73499	1468-00005	5W5Q5	MO.5-45	1FM-45	Osc. Grid Cap.

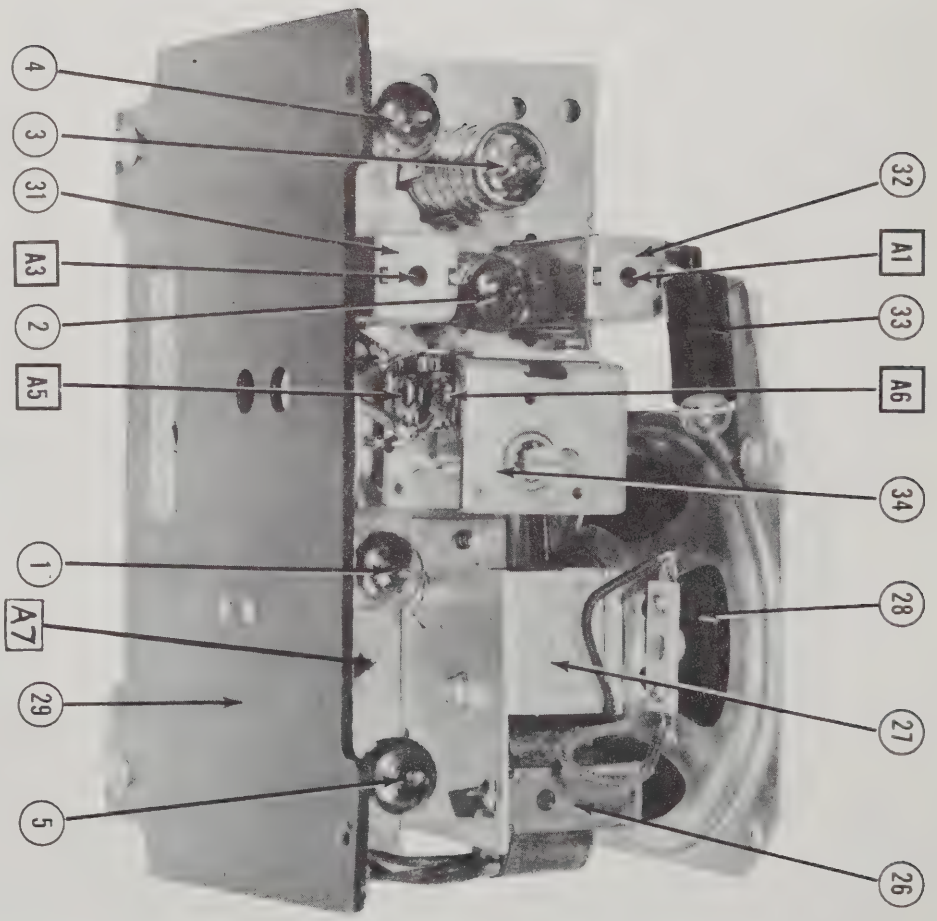
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	RCA PART No.	IRC PART No.	CLAROSTAT PART No.	
16	500KΩ	½	73488			Volume Control & Sw.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	RCA PART No.	IRC PART No.	
17	22KΩ	½		BTS-22K	Red-Red-Or. Osc. Grid
18	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
19	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
20	220KΩ	½		BTS-220K	Red-Red-Yl. AF Plate Load
21	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
22	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
23	1200Ω	1		BTA-1200	Br.-Red-Red Filter
24	220KΩ	½		BTS-220K	Red-Red-Red Line Isolation
25	100Ω	½		BW-½-100	Br.-Blk.-Br. IF Cathode

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		RCA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
26	1700Ω	3.5Ω	211Ω tapped @ 11Ω	.5Ω	72296	A-3330#		A-3031#	#Cut mounting tabs to duplicate original.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			RCA PART No.	JENSEN PART No.	QUAM PART No.	
27	FIELD PM	VC IMP. 3.5Ω	92577-1W	ST-113† Mod. P4-X		†Drill and tap magnet frame.
28	CONE DIA. 4"	VC DIA. 9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	RCA PART No.	MEISSNER PART No.	
29	Loop Ant.		1.8Ω	73496		
30	Osc. Coil	.9Ω	5.2Ω	70133	14-1060	
31	Input IF	16Ω	16Ω	73488	16-6678	
32	Output IF	15Ω	15Ω	73037	16-6678*	*Add 155MMFD from black lead to B-.

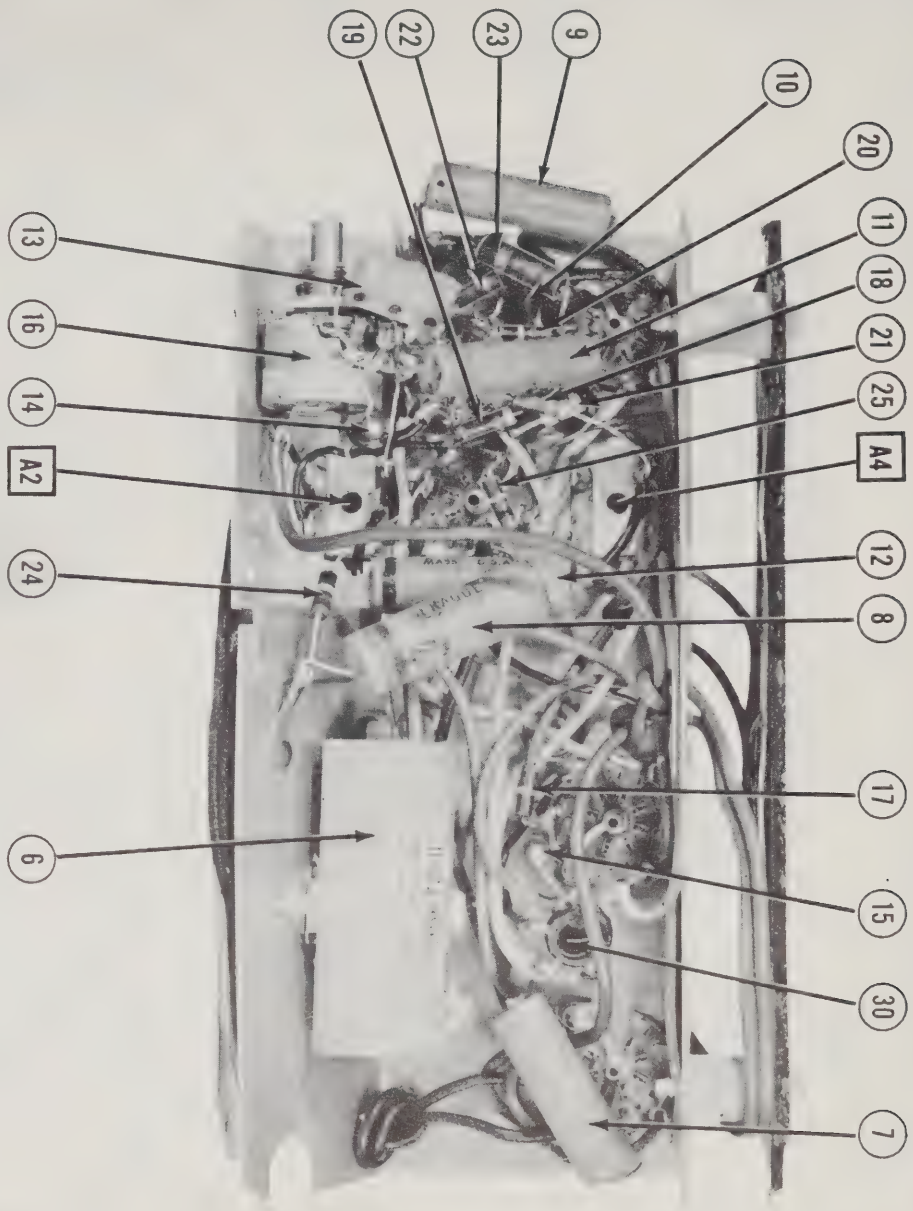
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					RCA PART No.		
33	Bayonet	7.5	0.2	White	11765		Type #51

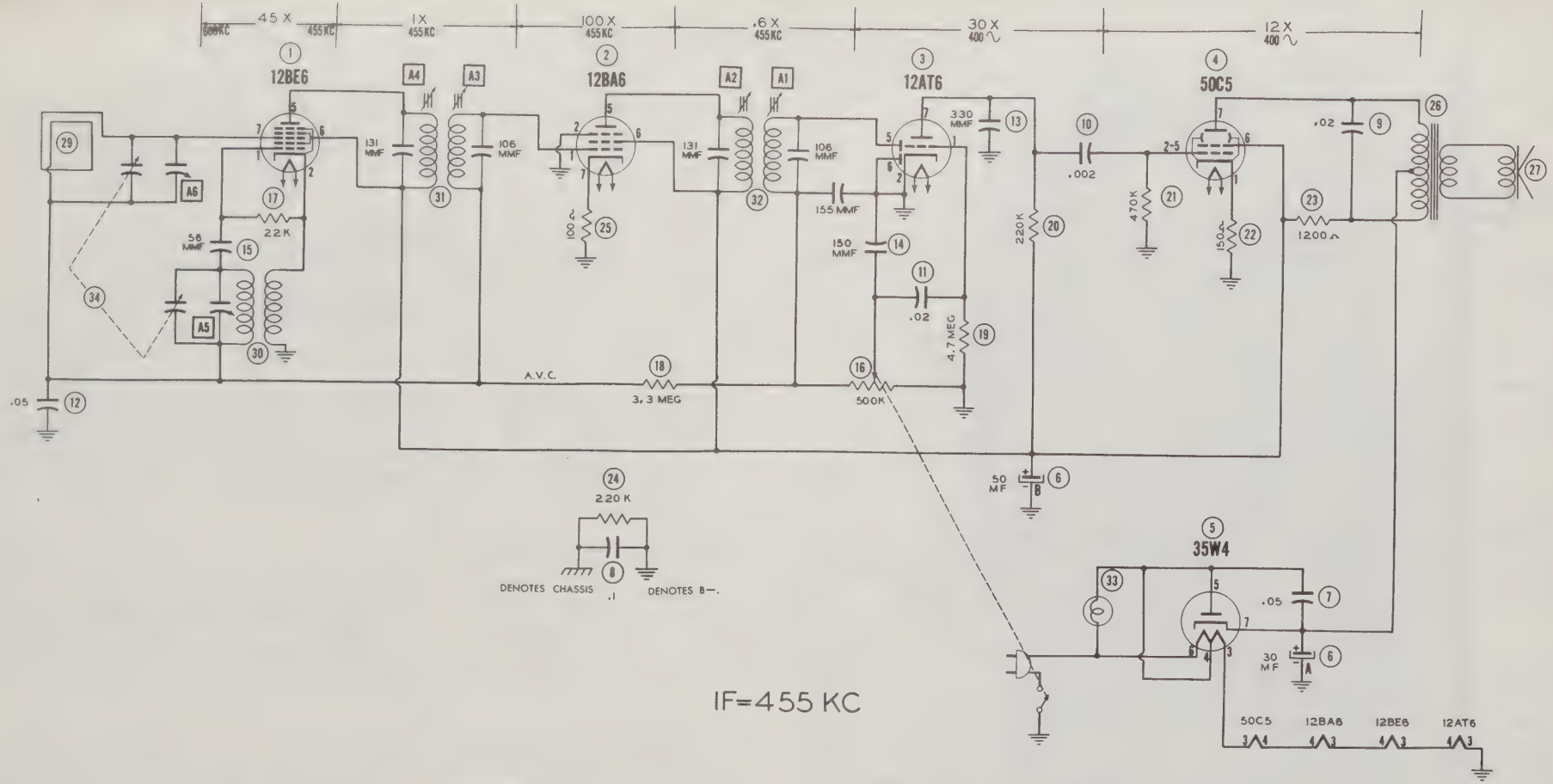
MISCELLANEOUS

ITEM No.	PART NAME	RCA PART No.	NOTES
34	2 Gang Var. Cap.	73496	(20-382MMF, 11-125MMF)
	Cabinet	Y1499	Model 8X521
	"	Y2001	Model 8X522
	Dial	73507	Calibrated Knob
	Dial Indicator	73504	
	Knob	73505	Model 8X521
	"	73506	Model 8X522

CHASSIS—BOTTOM VIEW



RCA (VICTOR) MODEL 8X521



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	-8.8VDC	0V.	12VAC	25VAC	95VDC	95VDC	0V.
2	12BA6	0V.	0V.	25VAC	38VAC	95VDC	95VDC	1VDC
3	12AT6	-.4VDC	0V.	0V.	12VAC	-4VDC	0V.	45VDC
4	50C5	5.6VDC	0V.	90VAC	38VAC	95VDC	95VDC	0V.
5	35W4	0V.	0V.	90VAC	117VAC	112VAC	112VAC	125VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	22KΩ	.9Ω	12Ω	25Ω	200KΩ	200KΩ	3.8 Meg.
2	12BA6	3.8 Meg.	0Ω	25Ω	38Ω	200KΩ	200KΩ	100Ω
3	12AT6	4.7 Meg.	0Ω	0Ω	12Ω	500KΩ	0Ω	420KΩ
4	50C5	150Ω	470KΩ	85Ω	38Ω	470KΩ	200KΩ	200KΩ
5	35W4	INF.	INF.	85Ω	115Ω	110Ω	110Ω	200KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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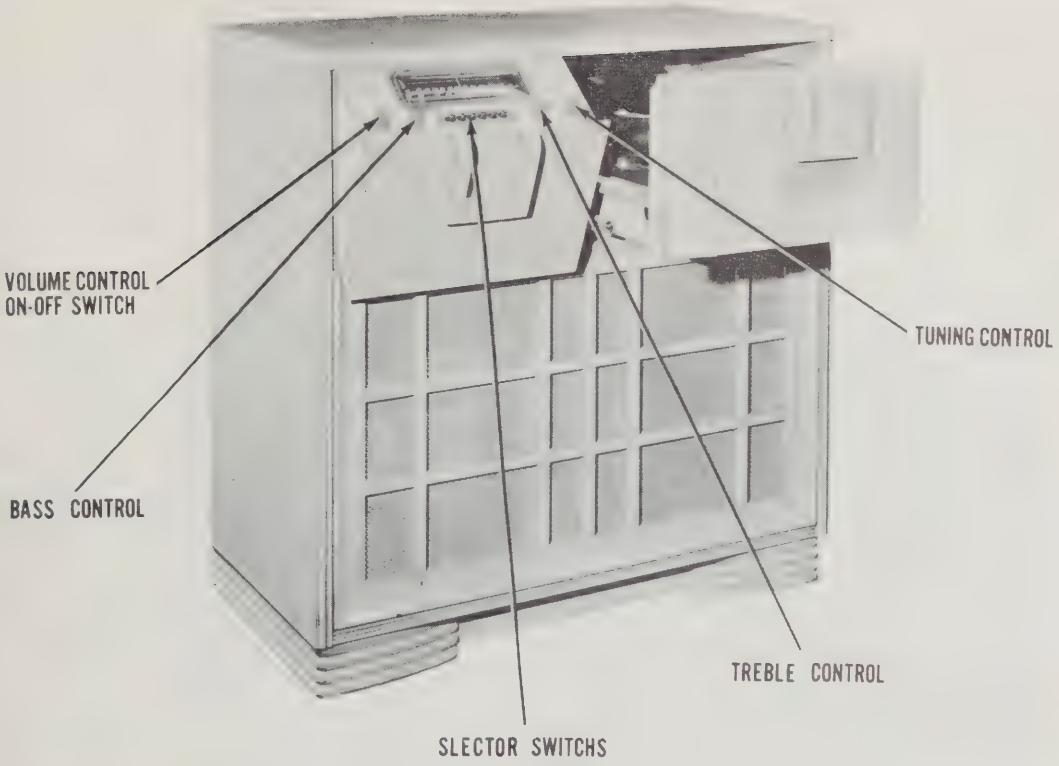
4822-17

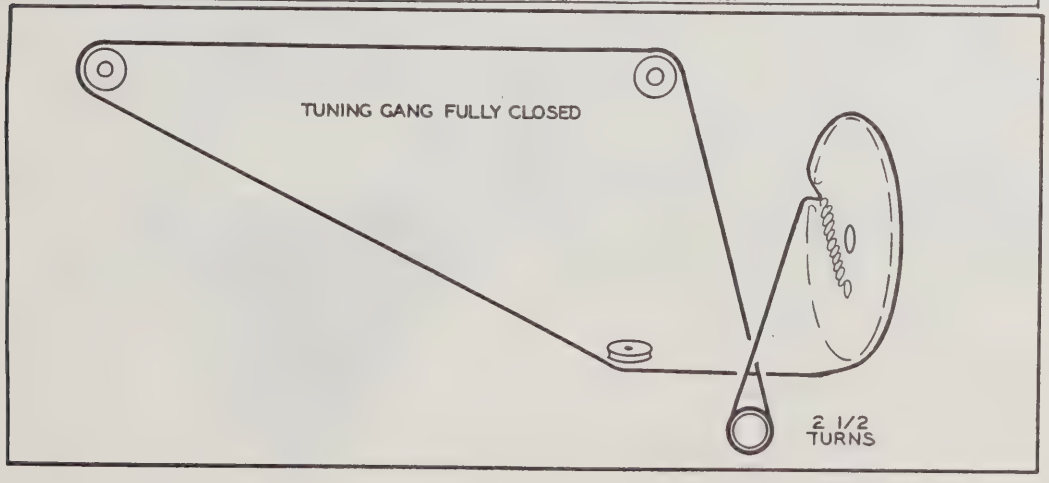
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



RECORDIO MODEL 7D44

TRADE NAME	Recordio, Models 7D42, 7D44 (Ch. 7D-1)
MANUFACTURER	Wilcox-Gay Corp., 604 Seminary St., Charlotte, Mich.
TYPE SET	AC Operated Combination Recorder-Phono-Radio, AM-FM Superheterodyne Receiver with Loop Antenna
TUBES (FIFTEEN)	Types, 6BA6 AM RF Amp., 6BE6 AM Converter, 7F8 FM Converter, 6BA6 AM-FM 1st IF Amp., 6BA6 FM 2nd IF Amp., 6AU6 Limiter, 6H6 Discriminator, 6SQ7 AM Det.-AVC-AF, 6E5 Tuning Indicator, 1T4 Mic. Pre-Amp., 6J5 Cutter Amp., 6SN7 AF-Phase Inv., (2) 6K6 Power Output, 5U4 Rectifier.
POWER SUPPLY	110-120 Volts AC — RATING .92 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1680KC — FREQ. MOD. 88-108MC



DIAL CORD DRIVE

RECORDIO MODELS
7D42, 7D44 (Ch. 7D1)

RECORDIO MODELS
7D42, 7D44 (Ch. 7D1)

HOWARD W. SAMS & CO., INC. Indianapolis, Indiana

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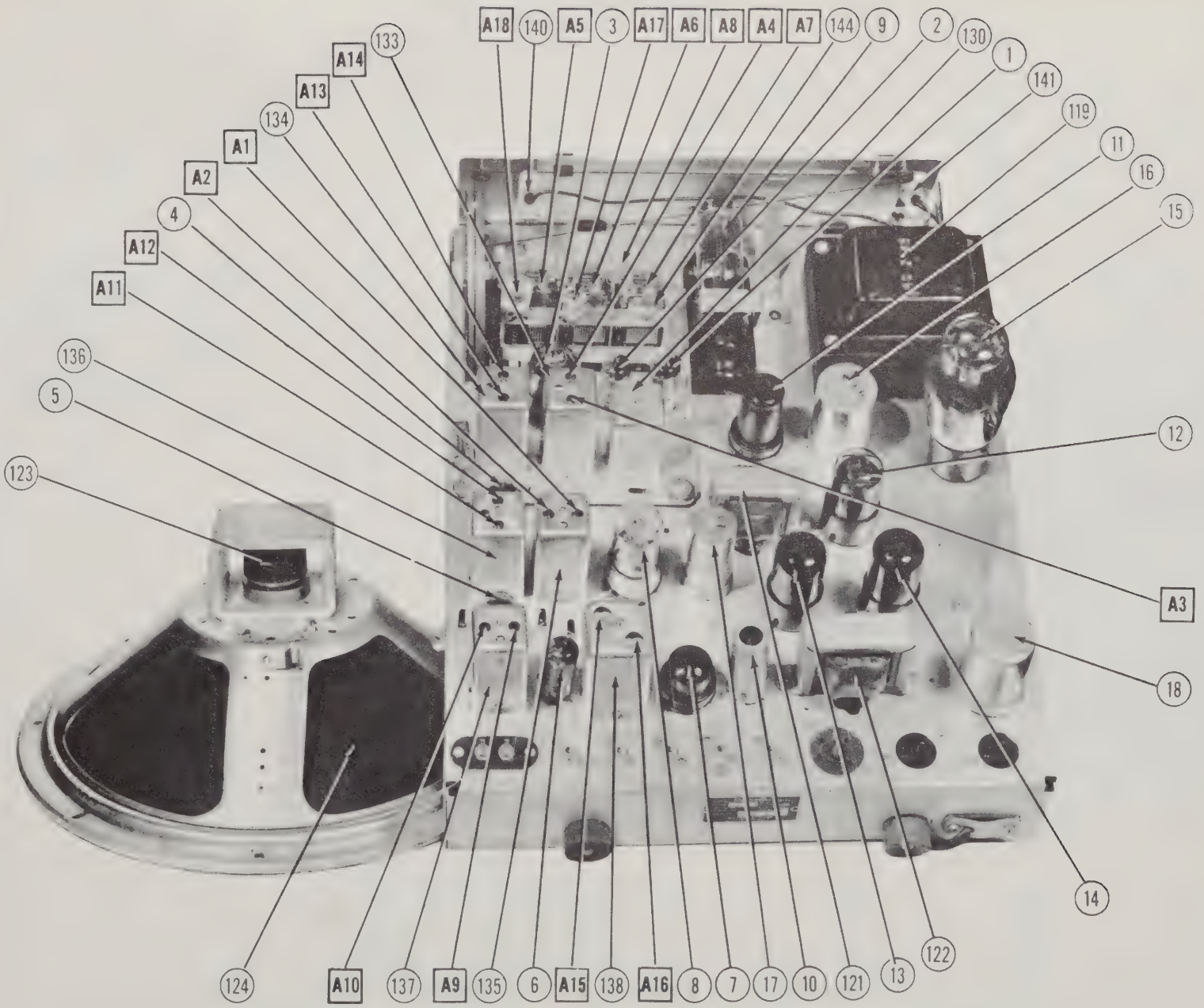
DATE 12/48-#4822-18 SET #52-FOLDER #18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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RECORDIO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	AM RF Amp.		6BA6	7BK	
2	AM Converter		6BE6	7CH	
3	FM "		7F8	8BW	
4	AM FM 1st IF		6BA6	7BK	
5	FM 2nd IF		6BA6	7BK	
6	Limiter		6AU6	7BK	
7	Discriminator		6H6	7Q	
8	AM Det.-AVC-AF		6SQ7	8Q	
9	Tuning Indic.		6E5	6R	
10	Mic. Pre-Amp.		1T4	6AR	
11	Cutter Amp.		6J5	6Q	
12	AF Phase Inv.		6SN7	8BD	
13	Power Output		6K6	7S	
14	" "		6K6	7S	
15	Rectifier		5U4	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RECORDIO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
16A	12	450		AF444J	UP15D145#	DY-3x15-450#	EL-344#	■ Filter
B	12	450						◓ "
C	10	450						▲ Decoupling
17A	10	450		AF22J4A	UP1145C	DY-316	EL-202	▲ AF Decoupling
B	10	450						■ " "
C	30	25						Cathode Bypass
18	200	50		PR850/100‡	BRH-501‡	DY-500-50	D7379	" "
19	.01	600		684-01	GT4S1	ST-6-01	TC-11	Line Filter
20	.01	600		684-01	GT4S1	ST-6-01	TC-11	Audio Coupling
21	.01	600		684-01	GT4S1	ST-6-01	TC-11	" "
22	.02	400		484-02	GT4S2	ST-4-02	TC-12	" "
23	.005	600		684-005	GT6D5	ST-6-005	TC-25	Tone Compensation
24	.002	600		684-002	GT6D2	ST-6-002	TC-22	" "
25	.1	200		484-.1	GT2P1	ST-2-1	TC-1	AVC Filter
26	.05	400		484-05	GT4S5	ST-4-05	TC-15	Audio Coupling
27	.1	200		484-.1	GT2P1	ST-2-1	TC-1	Ind. Grid Filter
28	.02	400		484-.02	GT4S2	ST-4-02	TC-12	Audio Coupling
29	.1	400		484-.1	GT4P1	ST-4-1	TC-1	Mic. Amp. Screen Byp.
30	.002	600		684-002	GT6D2	ST-6-002	TC-22	De-emphasis
31	.05	400		484-05	GT4S5	ST-4-05	TC-15	Lim. Plate Decoupling
32	.01	600		684-01	GT6S1	ST-6-01	TC-11	2nd IF Plate Decoup.
33	.01	600		684-01	GT6S1	ST-6-01	TC-11	1st IF Plate Decoup.
34	.01	600		684-01	GT6S1	ST-6-01	TC-11	AM Conv. Screen Byp.
35	.1	200		484-.1	GT2P1	ST-2-1	TC-1	AVC Filter
36	.1	400		484-.1	GT4P1	ST-4-1	TC-1	RF Bypass Pwr. Supply
37	.01	600		684-01	GT6S1	ST-6-01	TC-11	RF Coupling
38	.01	600		684-01	GT6S1	ST-6-01	TC-11	RF Screen Bypass
39	250	500		1468-00025	5W5T25	MO.5-325	1FM-325	Tone Compensation
40	50	500		1468-00005	5W5Q5	MO.5-45	1FM-45	AF Plate Bypass
41	50	500		1468-00005	5W5Q5	MO.5-45	1FM-45	Cutter Diode Filter
42	1000	300		484-01	GT4S1	ST-4-01	TC-11	Audio Coupling-Cer.-Note
43	330	500		1468-0003	5W5T3	MO.5-3	1FM-33	Tone Compensation
44	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	RF Bypass
45	250	500		1468-00025	5W5T25	MO.5-325	1FM-325	Limiter Screen Bypass
46	50	500		1468-00005	5W5Q5	MO.5-45	1FM-45	Limiter Grid Filter
47	10000	300		1467-01	1D3S1	MW.3-11	1FM-11	2nd IF Screen Byp.-Cer.
48	10000	300		1467-01	1D3S1	MW.3-11	1FM-11	2nd IF Cath. Byp.-Cer.
49	50	500		1468-00005	5W5Q5	MO.5-45	1FM-45	2nd IF Grid Filter
50	10000	300		1467-01	1D3S1	MW.3-11	1FM-11	1st IF Screen Byp.-Cer.
51	10000	300		1467-01	1D3S1	MW.3-11	1FM-11	1st IF Cath. Byp. "
52	10000	300		1467-01	1D3S1	MW.3-11	1FM-11	AVC Filter "
53	50	500		1468-00005	5W5Q5	MO.5-45	1FM-45	AM Osc. Grid Cap.
54	10	500		1469-00001	5R5Q1	MOS.5-41	MS-41	Fixed Trimmer
55	410	500		1468-0004	5W5T4	MO.5-34	1FM-34	FM Conv. Plate Decoup.
56	20	300		1468-000025	5W5Q25	MO.5-425	1FM-425	FM Conv. Cath. Byp.-Cer.
57	50	300		1469-00005	5R5Q5	MOS.5-45	MS-45	Osc. Coupling "
58	470	500		1468-0005	5W5T5	MO.5-35	1FM-35	Osc. Feedback
59	470	500		1468-0005	5W5T5	MO.5-35	1FM-35	Fil. Bypass
60	50	300		1469-00005	5R5Q5	MO.5-45	MS-45	FM Osc. Grid Cap. "

#Install new mounting socket.
‡Use two of these units connected in parallel.
Note-Items #42 and 101 are combined in one unit.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: RECORDIO PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No.
119	117V AC @ .92A	550V CT .136A DC	5.3V AC @ 3.0A	6.6V AC @ 4.7A	80-2185	P-6313	T22R05*	P-2954*

§Add series resistor to reduce plate voltage.
*Drill new mounting holes.

FILTER CHOKE

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA: RECORDIO PART NO.	REPLACEMENT DATA: STANCOR PART NO.	REPLACEMENT DATA: THORDARSON PART NO.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
120	.135A	173Ω	7.5 Henries	14-2102	C-1710		C-2993	

TRANSFORMER (CUTTER)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: RECORDIO PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
121A	6SN7 Matched to Cutterhead		845Ω	4500Ω tapped @ 910Ω	81-2108				Item 121A replaces Item 121B on chassis with serial # after 901444.
B					81-2103				

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: RECORDIO PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
122	12KΩ CT	3.7Ω	460Ω CT	.4Ω	81-2104	A-3870	T22S47**	C-2904**	**Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: RECORDIO PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
	FIELD	VC IMP.		ST-102†		†Replace output transformer to match 6-8Ω voice coil.
123	PM	3.7Ω	WG-64-2091	Mod. P12-S	12A6†	
	CONE DIA.	VC DIA.				
124	11½"	1"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: RECORDIO PART No.	REPLACEMENT DATA: MEISSNER PART No.
125	Loop Ant.BC		.2Ω		
126	Loop Load. Coil		0Ω		
127	BC Ant. Chk.		2.5Ω		
128	FM Dipole		1.5Ω		
129	FM Ant.Coil	0Ω	0Ω		
130	AM RF Coil	3Ω	4.5Ω	68-3008A	
131	BC Osc.Coil		3.5Ω		14-1060
132	FM " "		0Ω		
133	1st IF-AM	15Ω	15Ω	68-3003A	
134	" " FM	1Ω	1Ω	68-3005A	
135	2nd IF AM	12Ω		68-3004A	
136	" " FM	1Ω	1Ω	68-3005B	
137	3rd IF FM	1Ω	1Ω	68-3005A	
138	FM Det.Tran.	1Ω	1.3Ω	68-3007A	
139	Fil. Choke		.2Ω		

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	RECORDIO PART No.	IRC PART No.	CLAROSTAT PART No.	
61A	500KΩ	½		D13-133	M-60-Z	Volume Control
B	Shaft			A	Not Req.	Attach to 61A per instructions
C	Switch			41	SW-A	" " " "
62A	500KΩ	½		D13-133	M-60-Z	Bass Control
B	Shaft			A	Not Req.	Attach to 62A per instructions
63A	500KΩ	½		D13-133	M-60-Z	Treble Control
B	Shaft			A	Not Req.	Attach to 63A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	RECORDIO PART No.	IRC PART No.	
64	22KΩ	½		BTS-22K	Red-Red-Or. Antenna Loading
65	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AVC Network
66	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AM RF Grid
67	68Ω	½		BW-½-68	Blue-Gray-Blk. AM RF Cathode
68	22KΩ	½		BTS-22K	Red-Red-Or. AM Oscillator Grid
69	18KΩ	2		BT-2-18K	Br.-Gray-Or. AM Converter Screen Dropping
70	12KΩ	10		AB-12K	Br.-Red-Or. Voltage Dropping
71	3300Ω	½		BTS-3300	Or.-Or.-Red FM Converter Cathode
72	2200Ω	½		BTS-2200	Red-Red-Red FM Conv. Plate Decoupling
73	22KΩ	½		BTS-22K	Red-Red-Or. FM Oscillator Grid
74	2200Ω	½		BTS-2200	Red-Red-Red FM Oscillator Plate Load
75	68Ω	½			Blue-Gray-Blk. 1st IF Cathode
76	2200Ω	½		BTS-2200	Red-Red-Red 1st IF Screen Dropping
77	10KΩ	2		BT-2-10K	Br.-Blk.-Or. Decoupling
78	2200Ω	½		BTS-2200	Red-Red-Red 1st IF Plate Decoupling
79	100KΩ	½		BTS-100K	Br.-Blk.-Yl. 2nd IF Grid
80	68Ω	½			Blue-Gray-Blk. 2nd IF Cathode
81	2200Ω	½		BTS-2200	Red-Red-Red 2nd IF Screen Dropping
82	2200Ω	½		BTS-2200	Red-Red-Red 2nd IF Plate Decoupling
83	22KΩ	½		BTS-22K	Red-Red-Or. Limiter Grid
84	22KΩ	½		BTS-22K	Red-Red-Or. " "
85	150KΩ	½		BTS-150K	Br.-Grn.-Yl. Limiter Screen Dropping
86	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Limiter Plate Decoupling
87	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Indicator Grid
88	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Discriminator Diode Load
89	100KΩ	½		BTS-100K	Br.-Blk.-Yl. " " "
90	39KΩ	½		BTS-39K	Or.-White-Or. De-emphasis
91	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
92	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Diode Load
93	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Tone Compensation
94	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. Mic. Amp. Grid
95	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. Mic. Amp. Screen Dropping
96	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Mic. Amp. Plate Load
97	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Tone Compensation
98	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Phono Shunt
99	1.5 Meg.	½		BTS-1.5 Meg.	Br.-Grn.-Grn. Phono Tone Compensation
100	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Indicator Plate Load
101	10 Meg.	½		BTS-10 Meg.	AF Grid-See Note
102	220KΩ	½		BTS-220K	Red-Red-Yl. AF Plate Load
103	47KΩ	½		BTS-47K	Yl.-Vi.-Or. AF Plate Decoupling
104	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Indicator Grid Network
105	6.8 Meg.	½		BTS-6.8 Meg.	Blue-Gray-Grn. Cutter Diode Load
106	270KΩ	½		BTS-270K	Red-Vi.-Yl. Tone Compensation
107	220KΩ	½		BTS-220K	Red-Red-Yl. " "
108	220KΩ	½		BTS-220K	Red-Red-Yl. " "
109	82KΩ	½		BTS-82K	Gray-Red-Or. " "
110	6800Ω	½		BTS-6800	Blue-Gray-Red AF Cathode
111	270KΩ	½		BTS-270K	Red-Vi.-Yl. AF Plate Load
112	560KΩ	½		BTS-560K	Grn.-Blue-Yl. Phase Inverter Grid
113	270KΩ	½		BTS-270K	Red-Vi.-Yl. Phase Inverter Cathode
114	270KΩ	½		BTS-270K	Red-Vi.-Yl. Phase Inverter Plate Load
115	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
116	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. " "
117A	250Ω	10		AB-250	Output Cathode
B	150Ω			AB-150	" "
118	15KΩ	½		BTS-15K	Br.-Grn.-Or. Feedback
119	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Cutter Amp. Grid
120	680Ω	½		BTS-680	Blue-Gray-Br. Cutter Amp. Cathode

Note-Items 102 and 42 are combined in one unit.

DATE 12/48-#4822-1e SET #52-FOLDER #12

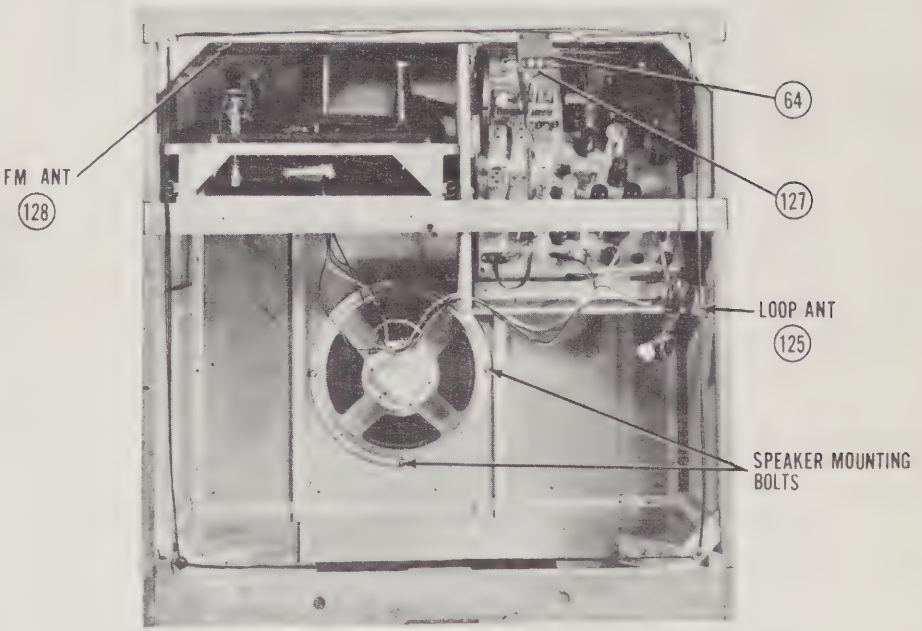
PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					RECORDIO PART No.		
140	Bayonet	6-8	0.25	Blue			Type 44
141	"	6-8	0.25	"			" "

MISCELLANEOUS

ITEM No.	PART NAME	RECORDIO PART No.	NOTES
142	Switch		Function
143	Lamp		Neon
144	3 Gang Var. Cap.		(43-546MMF, 3d-546MMF, 22-198MMF)



DISASSEMBLY INSTRUCTIONS

1. Remove two phono motor plugs, phono pickup, cutter speaker plugs from rear of chassis.
2. Remove four nuts holding speaker. Remove speaker.
3. Remove loop antenna and FM antenna leads from rear of chassis.
4. Remove four push-on type control knobs.
5. Remove three nuts holding wood block at rear of chassis. Hold chassis while removing these nuts to prevent chassis from sliding out of drawer.

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

AM ALIGNMENT

IF output meter is not available the tuning indicator may be used as an output indicator. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	Direct	Across loop input socket.	456KC	AM button depressed	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4	Adjust for maximum output and repeat until no further improvement can be made. Install receiver in cabinet with loop connected.
2		Loop	1400KC	"	1400KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver and adjust for maximum output.
3		"	"	"	Tune for maximum output.	"	A6,A7	Adjust for maximum output.
4		"	600KC	"	600KC	"	A8	Rock tuning cap. and adjust for maximum output. Repeat Steps 3 & 4 until no further improvement can be made.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

If VTVM is not available, a 20,000Ω/volt DC voltmeter may be used.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5	.01 MFD	High side to right hand FM stator of tuning cap. Low side to chassis.	10.7MC (Unmodulated)	FM button depressed	Tuning cap. fully open	DC probe in series with 1KΩ resistor to Point (A). Common to chassis.	A9,A10 A11, A12, A13, A14	Adjust for maximum deflection. Attenuate output of sig. gen. to maintain maximum meter reading of 5 volts.
6	.01 MFD	"	"	"	"	DC probe in series with 1KΩ resistor to Point (B). Common to chassis.	A15	Adjust for maximum deflection.
7	.01 MFD	"	"	"	"	DC probe in series with 1KΩ resistor to Point (C). Common to chassis.	A16	Adjust for zero deflection. Continue with FM-RF Alignment in Step 8.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5	.01 MFD	High side to Pin 1 (grid) of 6BA6 1st IF Tube (4). Low side to chassis.	10.7MC (Freq. Mod.)	FM (Button depressed)	Tuning cap. fully open.	Vertical input to Point (A). Ground to chassis.	A9,A10 A11,A12	Adjust for maximum amplitude, symmetry and coincidence of pattern per Fig. 1.
6	.01 MFD	High side to right hand FM stator of tuning cap. Low side to chassis.	"	"	"	"	A13, A14	"
7	.01 MFD	"	"	"	"	Vertical input to Point (C). Ground to chassis.	A15, A16	Alternately adjust A15 for maximum amplitude and straightness of crossover lines and A16 for centering of crossover Point of pattern per Fig. 2. Continue with FM RF Alignment in Step 8.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8	2-150Ω carbon res.	Each side in series with 150Ω resistor to FM ant. terminals.	100MC (Unmodulated)	FM	100MC	DC probe to Point (A). Common to chassis	A17	Adjust for maximum deflection. Adjustment of A17 will give two peaks. Adjust for peak requiring least capacity in A17.
9	"	"	"	"	Tune for maximum deflection.	"	A18	Rock tuning cap. and adjust for maximum deflection.

FIG. 1

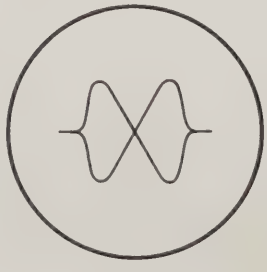


FIG. 2

PHOTOFACT* Folder

*TRADE MARK

SCOTT MODELS
6T11, 6T11A

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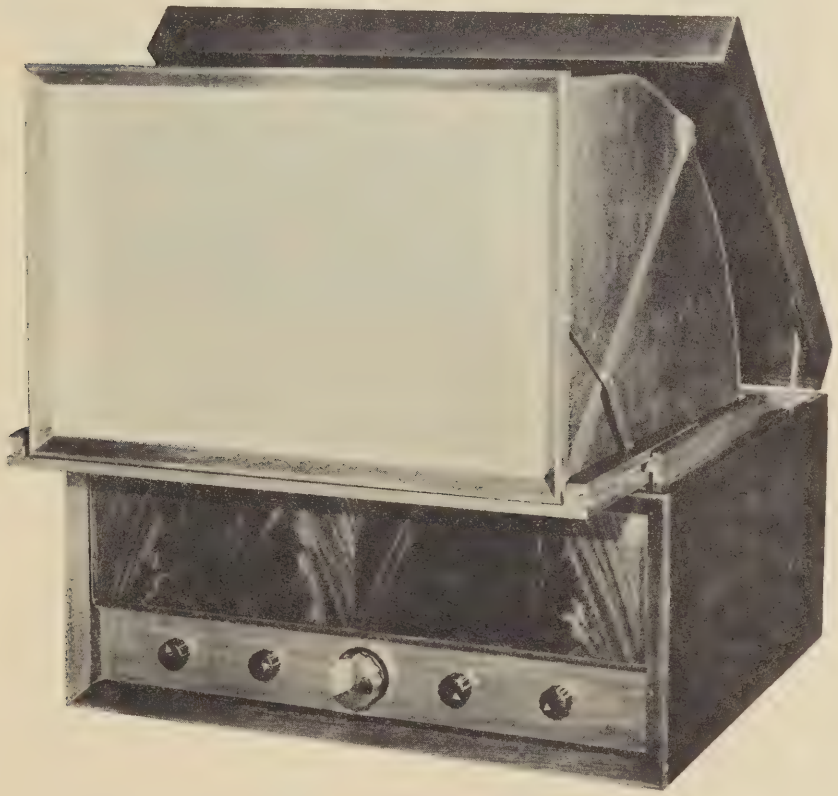
The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.



SCOTT MODELS
6T11, 6T11A

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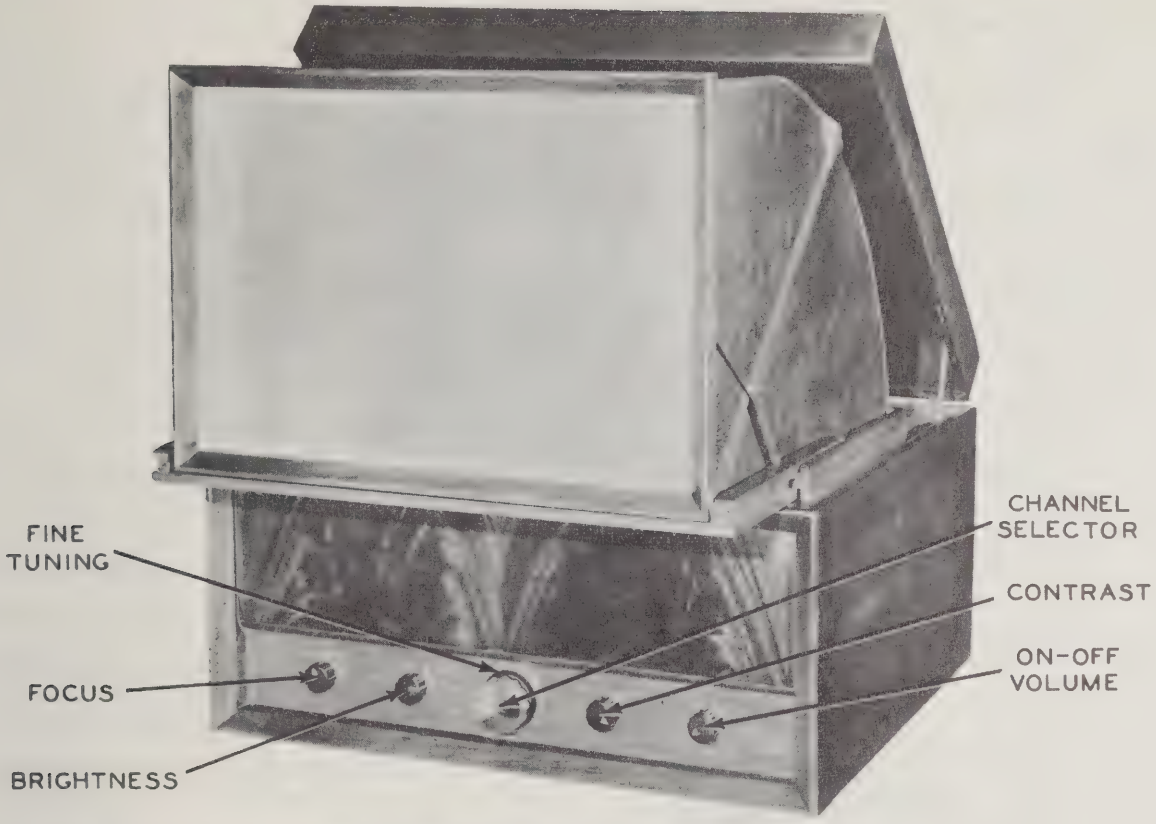
Date 12/48—No. 4822-19 Set No. 52—Folder No. 19



SCOTT MODELS
6T11, 6T11A

TRADE NAME	Scott, Model 6T11, 6T11A
MANUFACTURER	Scott Radio Labs., Inc., 4450 Ravenswood Ave., Chicago, Ill.
TYPE SET	Projection Television Receiver
TUBES	Thirty-one
POWER SUPPLY	105-125 Volts AC, 60 Cycle RATING 1.9 Amps. @ 117 Volts AC
TUNING RANGE—	Channels- 2 through 13

TABLE OF CONTENTS

	Page		Page
Schematic	2	Power Supply Chassis-Bottom View	11
Chassis-Top View	3	Voltage and Resistance Measurements	12
Sarkes Tarzian Tuner-Right Side	4	Parts List and Description	13,14,16
Sarkes Tarzian Tuner-Left Side	4	High Voltage Supply-Top View	15
Chassis Bottom View-Resistor Identification	5	High Voltage Supply-Bottom View	15
Alignment Instructions	6,7	Tube Placement Chart	17
High Voltage Adjustment	7	General Instrument Tuner Schematic	18
Horizontal AFC Adjustment	7	Block Diagram	18
Chassis Bottom View-Capacitor Identification	8	Adjustment of Optical System	19
General Instrument Tuner-Right Side	9	Disassembly Instructions	19
General Instrument Tuner-Left Side	9	Removal of Projection Tube	19
Chassis Bottom View-Trans., Inductor and Alignment Identification	10	Service Control Adjustment Location	19
		Projection Unit	20
Power Supply Chassis-Top View	11	Deflection and Focus Coil Assembly	20

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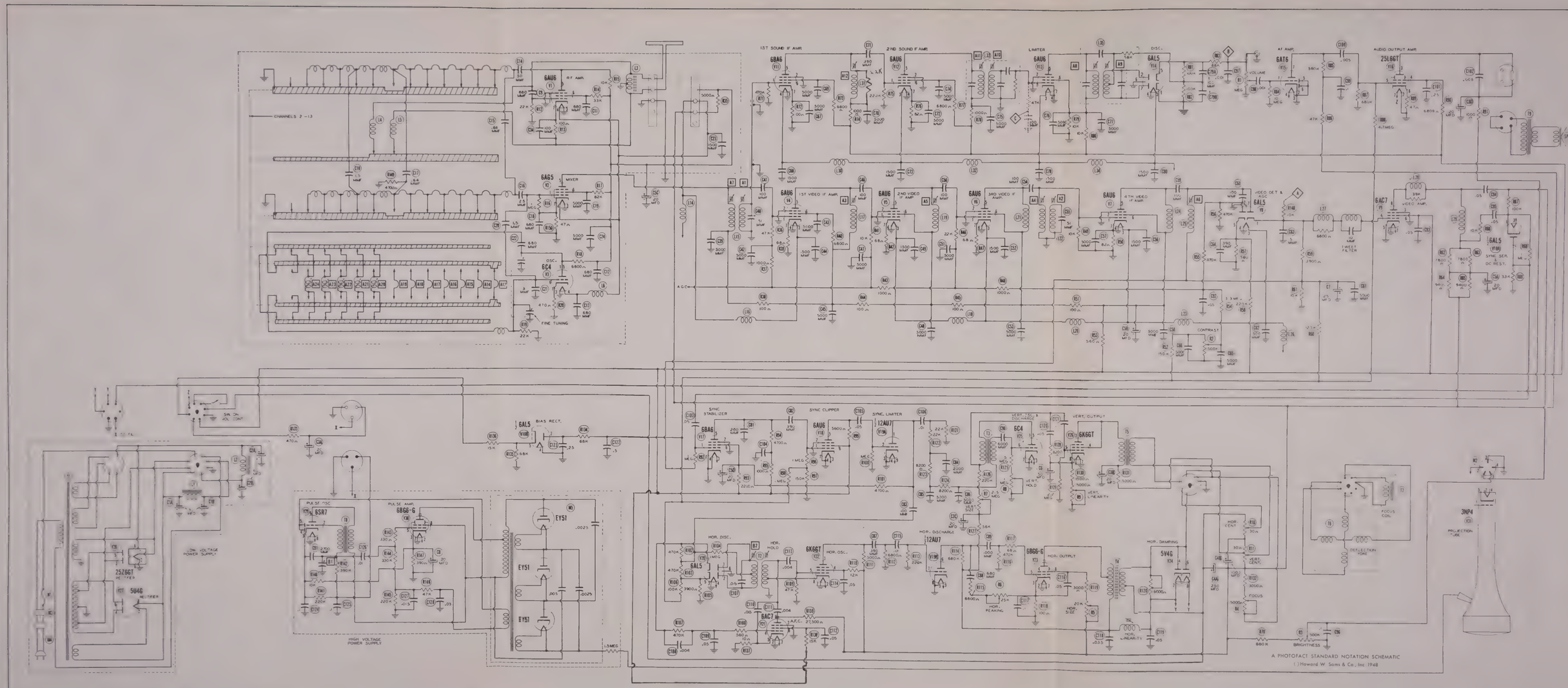
DATE 12/48-#4822-19 SET #52-FOLDER #19


CHANNELS 2 -13
6AU6
RF AMP.
6AG5
MIXER
6C4
OSC.
FINE TUNING
1ST SOUND IF AMR
2ND SOUND IF AMR
LIMITER
DISC.
AF AMP.
AUDIO OUTPUT AMR
6BA6
6AU6
6AL5
6AT6
2SL6GT
1ST VIDEO IF AMR.
2ND VIDEO IF AMP.
3RD VIDEO IF AMP.
4TH VIDEO IF AMP.
VIDEO DET. & AGC
VIDEO AMP.
6AC7
SYNC SEP. DC REST.
AGC
SYNC STABILIZER
SYNC CLIPPER
SYNC. LIMITER
VERT. OSC. & DISCHARGE
VERT. OUTPUT
6K6GT
HOR. DISC.
HOR. HOLD
HOR. OSC.
HOR. DISCHARGE
12AU7
6BG6-G
HOR. OUTPUT
HOR. DAMPING
5V4G
HOR. LINEARITY
HOR. CENT.
VERT. CENT.
FOCUS
BRIGHTNESS
FOCUS COIL
DEFLECTION YOKE
3NP4
PROJECTION TUBE
CONTRAST
VOLUME
SYNC SEP.
DC REST.
VIDEO AMP.
TWEET FILTER
BIAS RECT.
6AL5
PULSE OSC.
6SR7
PULSE AMP.
HIGH VOLTAGE POWER SUPPLY
LOW VOLTAGE POWER SUPPLY
2S256T
RECTIFIER
5U4G
RECTIFIER
EY51
EY51
EY51
6AC7
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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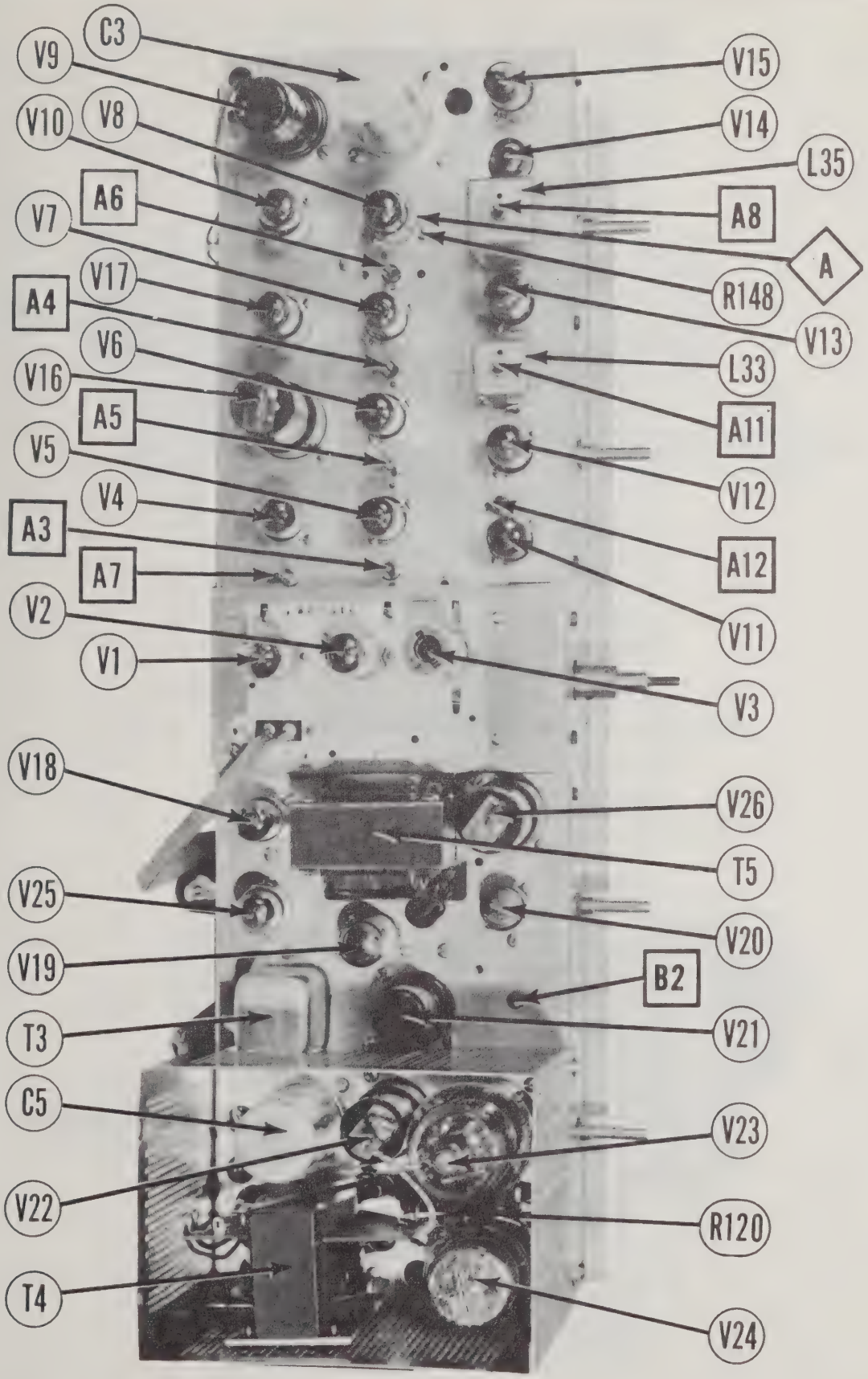
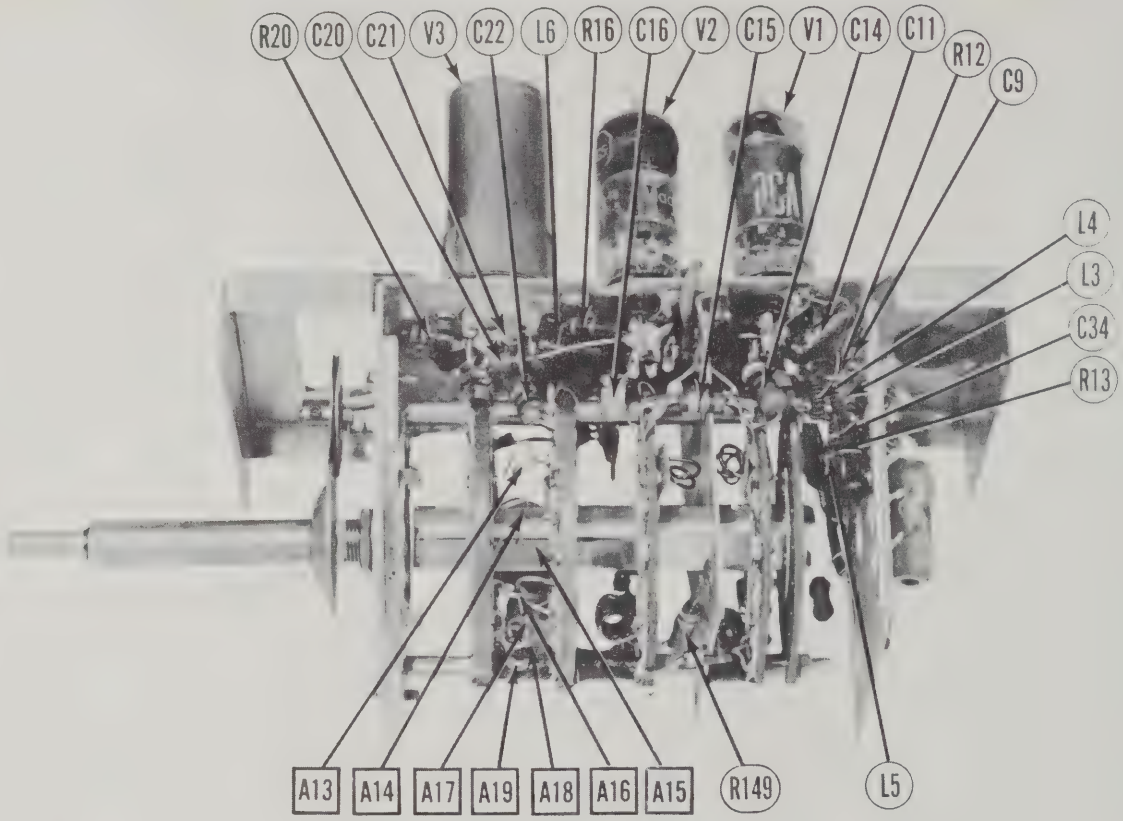
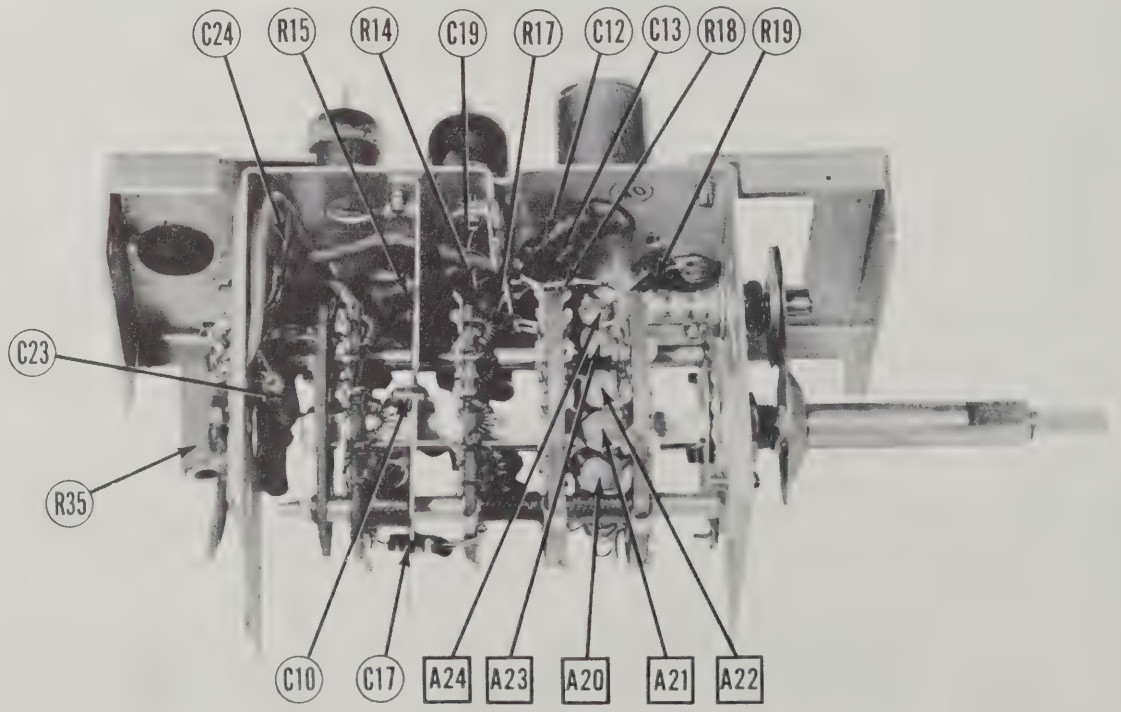


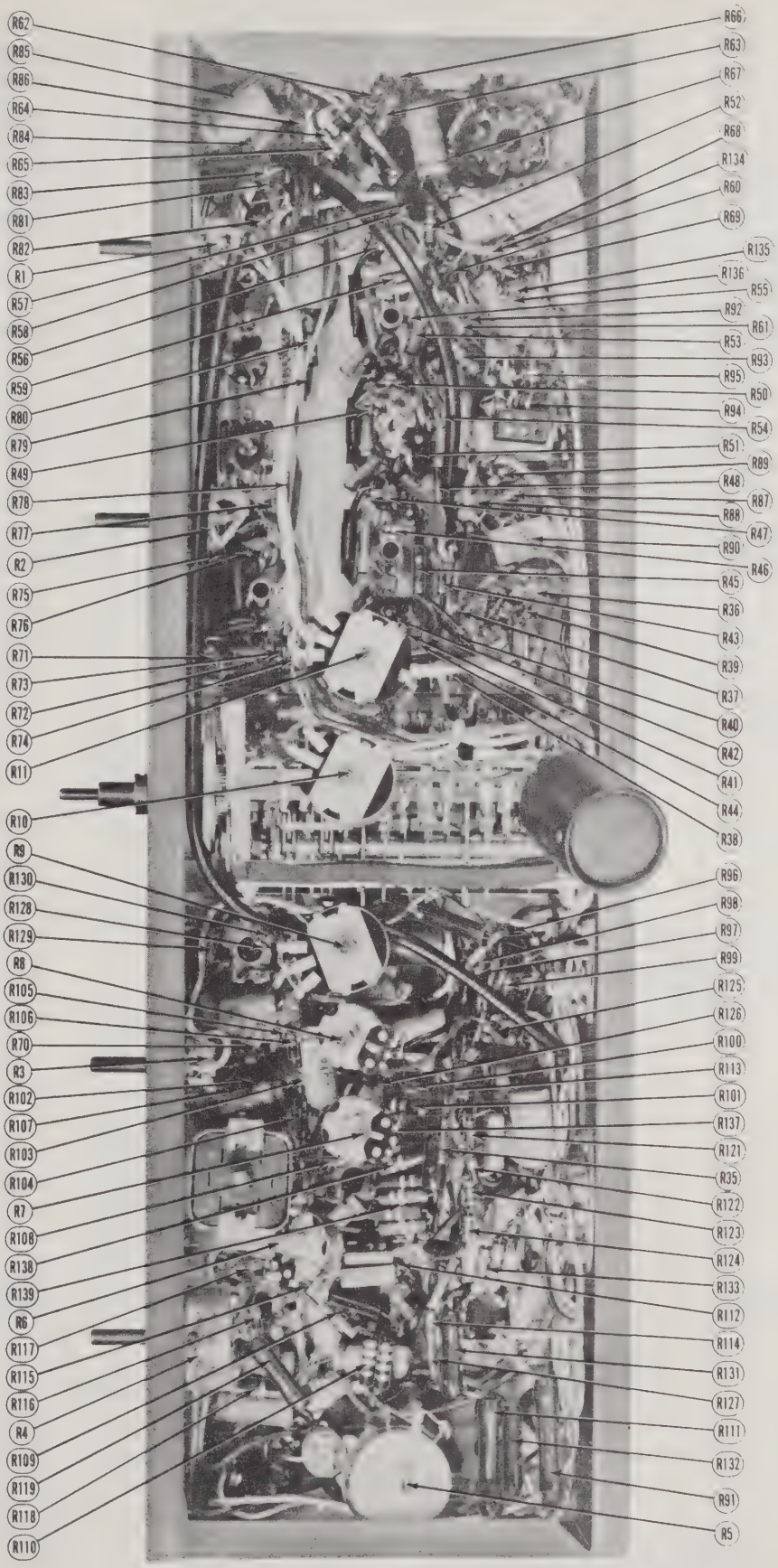
CHASSIS-TOP VIEW



SARKES TARZIAN TUNER-RIGHT SIDE



SARKES TARZIAN TUNER- LEFT SIDE



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The signal generator lead should be shielded and terminated at the end by a resistor equal to the characteristic impedance of the signal generator.

The ground connection of the generator should be as close as possible to the high side connection.

Keep the output of the signal generator low enough to prevent overloading of the IF circuits.

Signal injection for IF Alignment should be through a dummy converter tube. Sets using the Sarkes Tarzian tuner will use the dummy 6AG5 shown in Fig. 1. Sets using the General Instrument Tuner will use the dummy 6J6 shown in Fig. 2.

The contrast control should be set to apply -3.5 volts to the I.F. bias return.

Remove the 6AC7 video amplifier to reduce the possibility of regeneration.

The tuner is factory aligned and should never require readjustment. Do not perform the RF alignment unless it is found to be necessary.

In Step 6 loosely couple the output of the marker generator to the output of the FM signal gen. Use an insulated alignment screwdriver for adjusting.

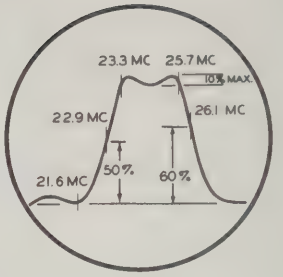


FIG. 3

VIDEO IF ALIGNMENT USING AM SIGNAL GENERATOR AND OSCILLOSCOPE

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1	See above	Dummy Converter (See Above)	21.6MC (Amp. Mod. 400 ∿)		8	High side to Point ◇ .Low side to chassis.	A1,A2,	Adjust for minimum amplitude.
2	"	"	23.3MC (Modulated)		"	"	A3,A4	Adjust for maximum amplitude.
3	"	"	25.7MC (Modulated)		"	"	A5,A6	"
4	"	"	24.5MC (Modulated)		"	"	A7	"
5	"	"	21.6MC		"	"	A1,A2	Recheck for minimum amplitude.
	If an FM Signal Generator is available, perform Step 6 to check the pass band. Otherwise continue with Step 7.							
6	See above	Dummy Converter (see above)	25MC 10MC sweep	See Fig. 3	8	High side to Point ◇ .Low side to chassis.	A3,A4, A5,A6, A7	Check response to approximate Fig. 3. Marker at 26.1MC must fall at 60%. Only slight readjustment should be necessary.

FIG. 4

SOUND IF ALIGNMENT USING VACUUM TUBE VOLTMETER

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7	Direct	Pin #1 (grid) of 6AU6 (V13).	21.6MC (Unmodulated)	8	High side to Point ◇ .Low side to chassis	A8	Detune A9 to assure output from discriminator. Adjust A8 for maximum deflection.
8	Direct	"	"	"	"	A9	Adjust for zero voltage. This point should be between two peaks of opposite polarity.
9	See above.	Dummy converter. See above.	"	"	High side to Point ◇ .Low side to chassis Connect series network per schematic.	A10,A11, A12	Connect a 100 ohm carbon resistor between plate and screen of V13. Adjust A10, A11 and A12 for maximum deflection. Remove resistor after alignment is completed.

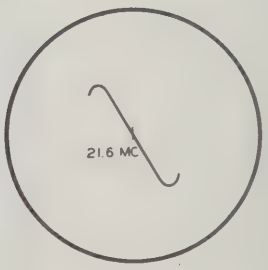


FIG. 5

ALTERNATE SOUND IF ALIGNMENT USING SWEEP SIGNAL GENERATOR AND OSCILLOSCOPE

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7	See above	Dummy converter see above.	21.6MC (600KC sweep)	21.6MC	8	High side to Point ◇ . Low side to chassis.	A10, A11, A12	Connect 100Ω carbon resistor from plate to screen of V13 while adjusting A10, A11 and A12. Adjust for maximum amplitude and symmetry with marker at peak of curve (See Fig. 4).
8	"	"	"	"	"	High side to Point ◇ .Low side to chassis.	A8	Remove 100Ω resistor. Adjust for maximum amplitude of S curve.
9	"	"	"	"	"	"	A9	Adjust for maximum straightness of S curve with 21.6MC at center. See Fig. 5. Readjust A8 for maximum amplitude and straightness of curve.

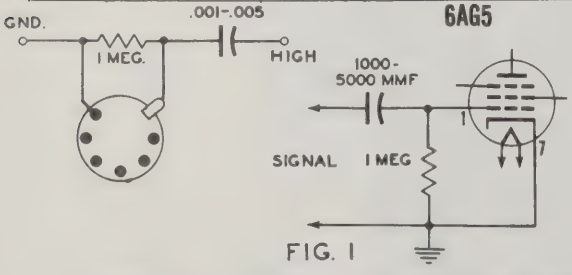
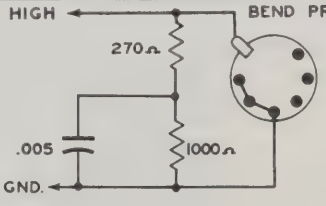


FIG. 1

BEND PIN #1 OUT CAREFULLY TO PREVENT IT FROM ENTERING THE SOCKET. SOLDER TO IT A ONE MEGOHM RESISTOR AND A SMALL COUPLING CAPACITOR. THE OTHER END OF THE ONE MEGOHM RESISTOR SHOULD BE SOLDERED TO PIN #7. A GROUND LUG SHOULD ALSO BE CONNECTED TO THIS POINT. THE SIGNAL IS APPLIED TO THE TUBE THROUGH THE COUPLING CAPACITOR.



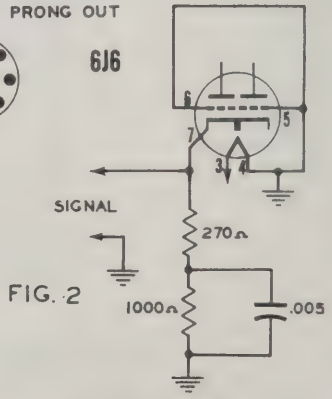


FIG. 2

BEND PIN #7 OUT FOR SIGNAL INJECTION. CONNECT PINS 5 AND 6 TO PIN 4 WHICH IS GROUNDED AT THIS SOCKET.

ALIGNMENT (CONT.)

RF ALIGNMENT-SARKES TARZIAN TUNER

Do not align the RF Tuner unless it is definitely found to be out of alignment. For RF Alignment the signal generator should be connected to the antenna terminals in series with a 100 ohm resistor in each lead.

OSCILLATOR ADJUSTMENTS ON THE SARKES TARZIAN TUNER ARE INDEPENDENT, SO ONLY THOSE CHANNELS WHICH ARE ACTUALLY OUT OF ALIGNMENT NEED BE ADJUSTED.

Fine tuning control should be at the center of its range during adjustments. Some models of the General Instrument Tuner use a mechanical fine tuning which must be reset for each channel.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10	See above	Antenna terminals	215.75MC	13	High side to Point Ⓔ. Low side to chassis.	A13	Expand or compress osc. coil for zero deflection. This point must be between two peaks of opposite polarity.
11	"	" "	209.75MC	12	"	A14	"
12	"	" "	203.75MC	11	"	A15	"
13	"	" "	197.75MC	10	"	A16	"
14	"	" "	191.75MC	9	"	A17	"
15	"	" "	185.75MC	8	"	A18	"
16	"	" "	179.75MC	7	"	A19	"
17	"	" "	87.75MC	6	"	A20	Adjust for zero deflection. This point must be between two peaks of opposite polarity.
18	"	" "	81.75MC	5	"	A21	"
19	"	" "	71.75MC	4	"	A22	"
20	"	" "	65.75MC	3	"	A23	"
21	"	" "	59.75MC	2	"	A24	"

RF ALIGNMENT-GENERAL INSTRUMENT TUNER

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10	See above	Antenna terminals.	179.75MC	7	High side to Point Ⓔ. Low side to chassis.	A25	Adjust for zero deflection. This point must be between two peaks of opposite polarity.
11	"	"	59.75MC	2	"	A26	"
12	"	"			"		Check to be sure all other channels are received well within limits of fine tuning control. If not, some compromise may be made using A25 for channels 7 through 13 and A26 for channels 2 through 6.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13	See above	Antenna terminals.	213MC (400 ∿ modulation)	13	High side to Point Ⓐ. Low side to chassis.	A27,A28, A29,A30	Adjust for maximum amplitude, Be sure signal input is low enough to prevent overload. The two trimmers of a pair, i.e. A27-A28 and A29-A30 should be kept in the same relative position.
14	"	"	85MC (400 ∿ modulation)	6	"	A31,A32, A33,A34	Adjust for maximum amplitude. Be sure signal input is low enough to prevent overload. The two trimmers of a pair, i.e. A31-A32 and A33-A34 should be kept in the same relative position.

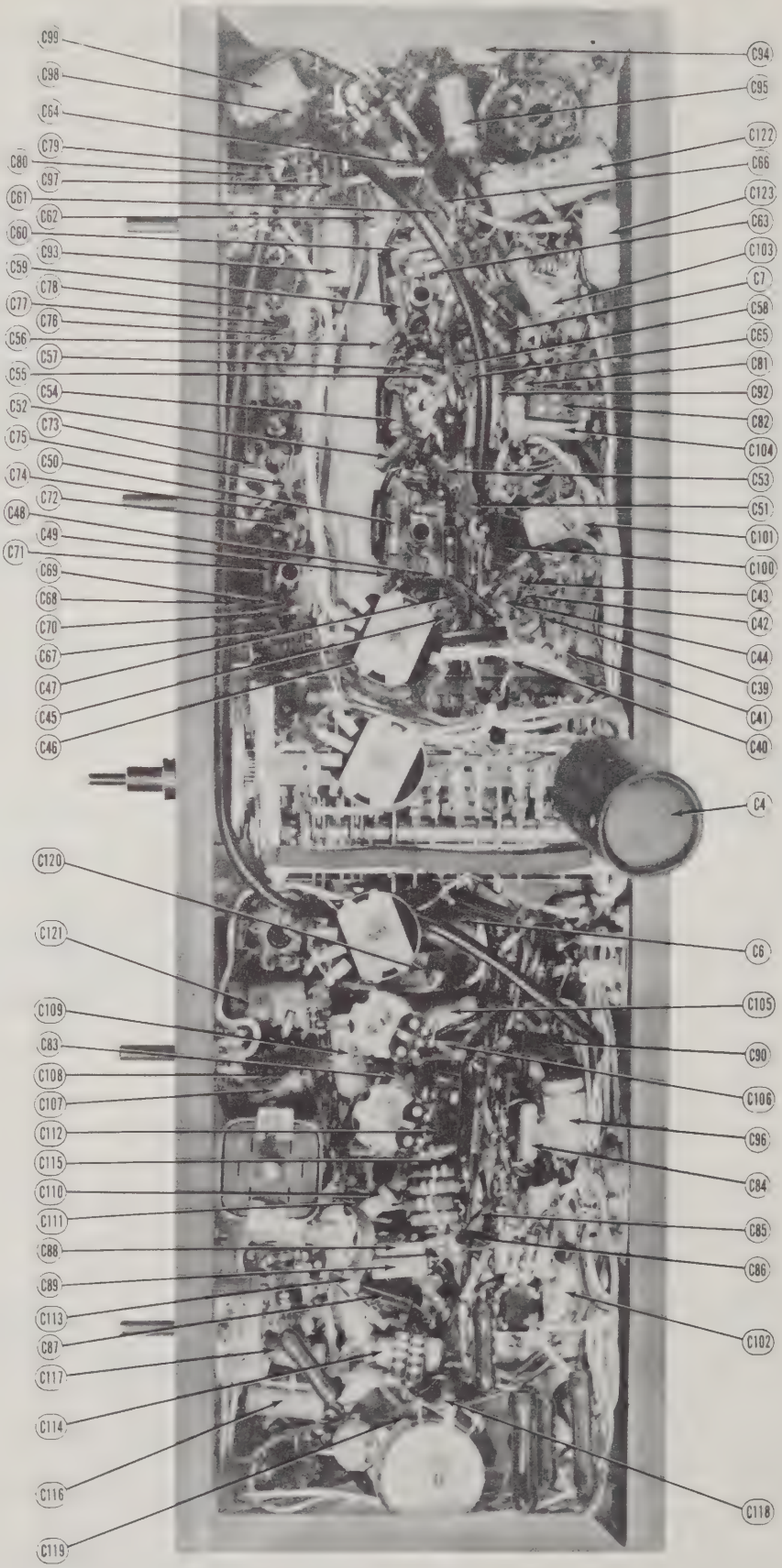
HIGH VOLTAGE ADJUSTMENT

The blocking oscillator in the high voltage power supply should operate at 1000 cycles per second. This may be checked by applying a 1000 CPS sine wave to the horizontal input of an oscilloscope, while the vertical input is connected to the grid of the 6BG6 driver amplifier. When the correct frequency is reached the oscilloscope will show a single sine wave cycle on a vertical axis. Adjust B1 for correct frequency.

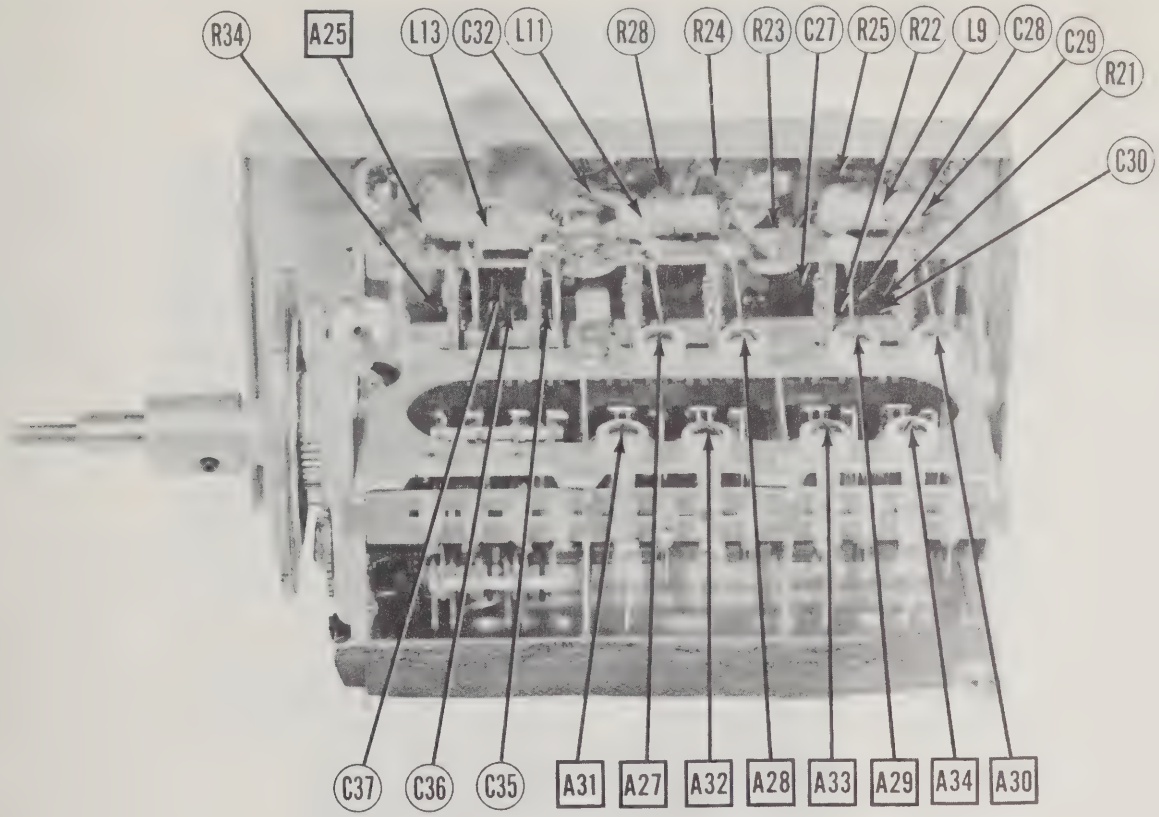
HORIZONTAL AFC ADJUSTMENT

Reduce the setting of the contrast control until the picture loses synchronization. Adjust the horizontal hold control until the lines formed by the picture elements and blanking pedestals are vertical. If the picture does not lose synchronization the control need not be adjusted.

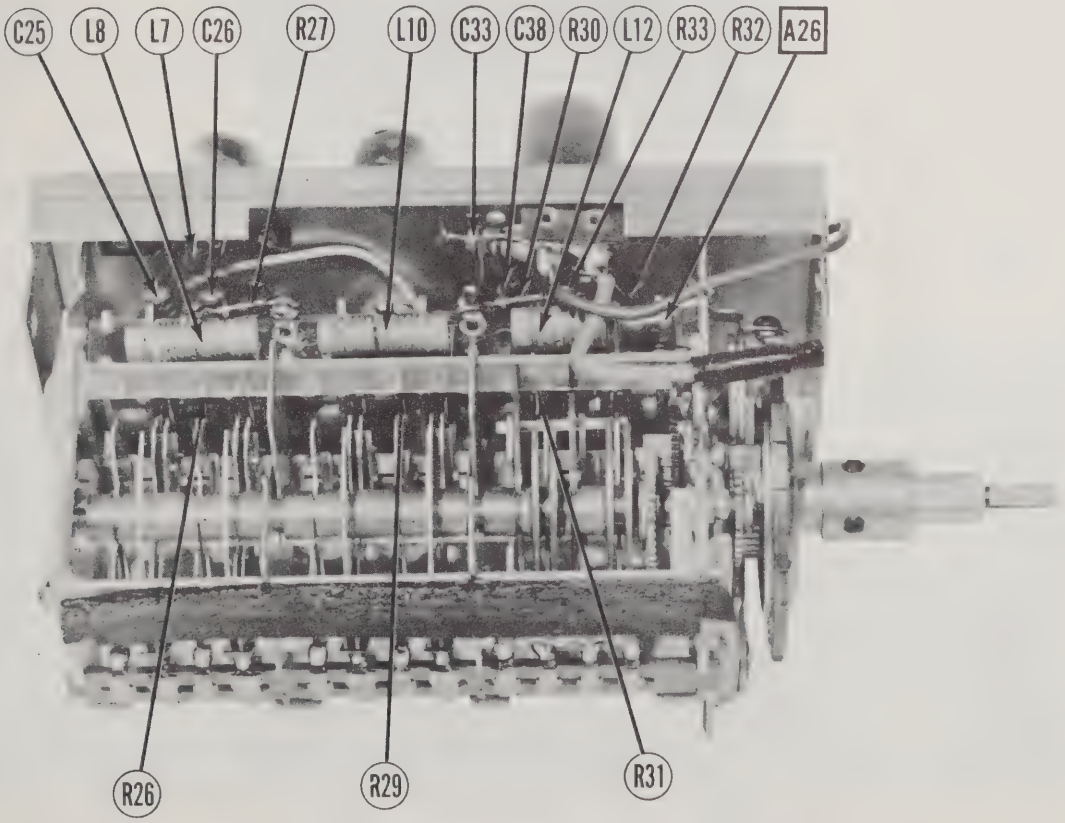
The phasing control (B2) located on the top of the discriminator will normally never need adjustment unless the entire transformer is replaced. Misadjustment will be indicated by a black line running vertically down the picture. Adjust (B2) until the line moves off the side of the picture and the picture has maximum width.



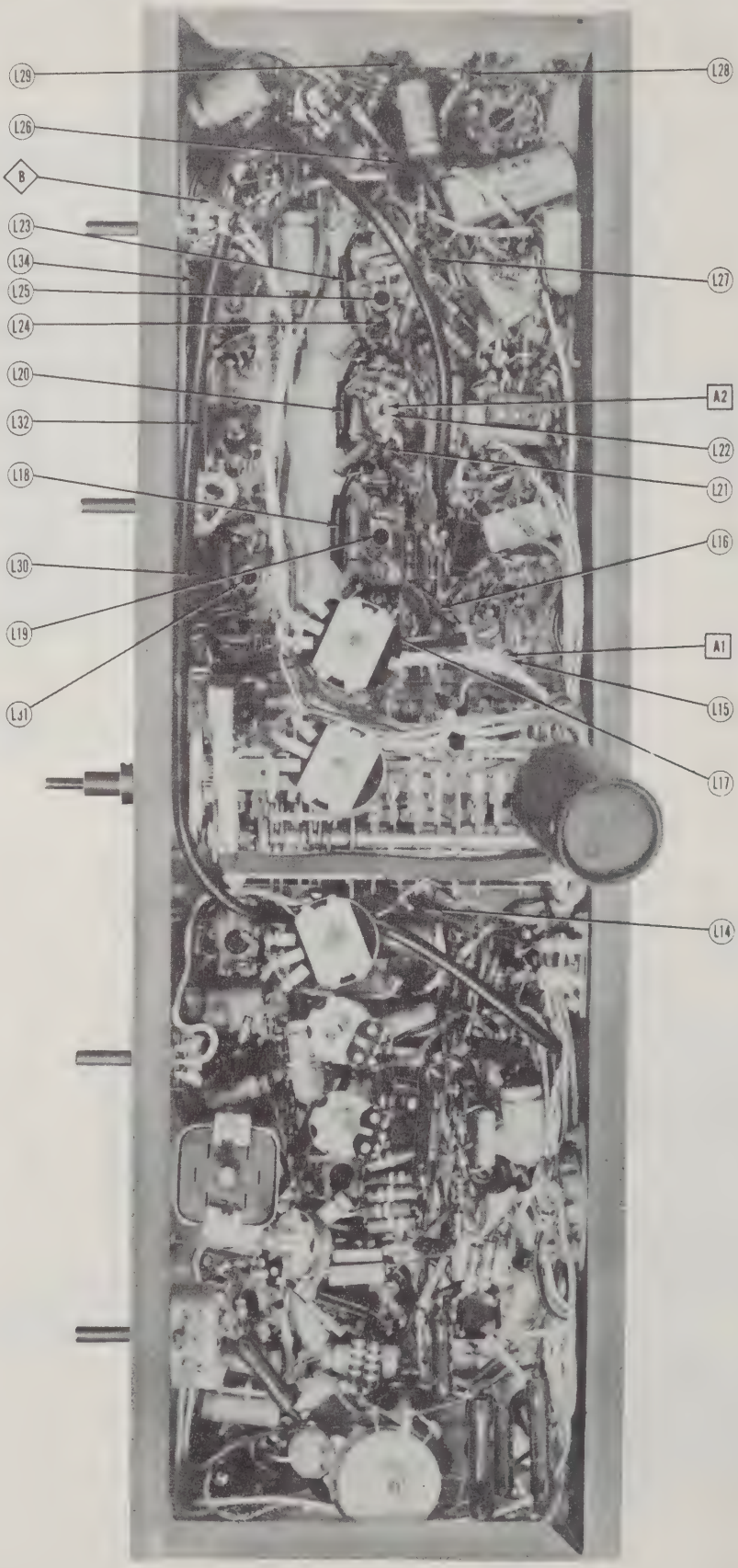
CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



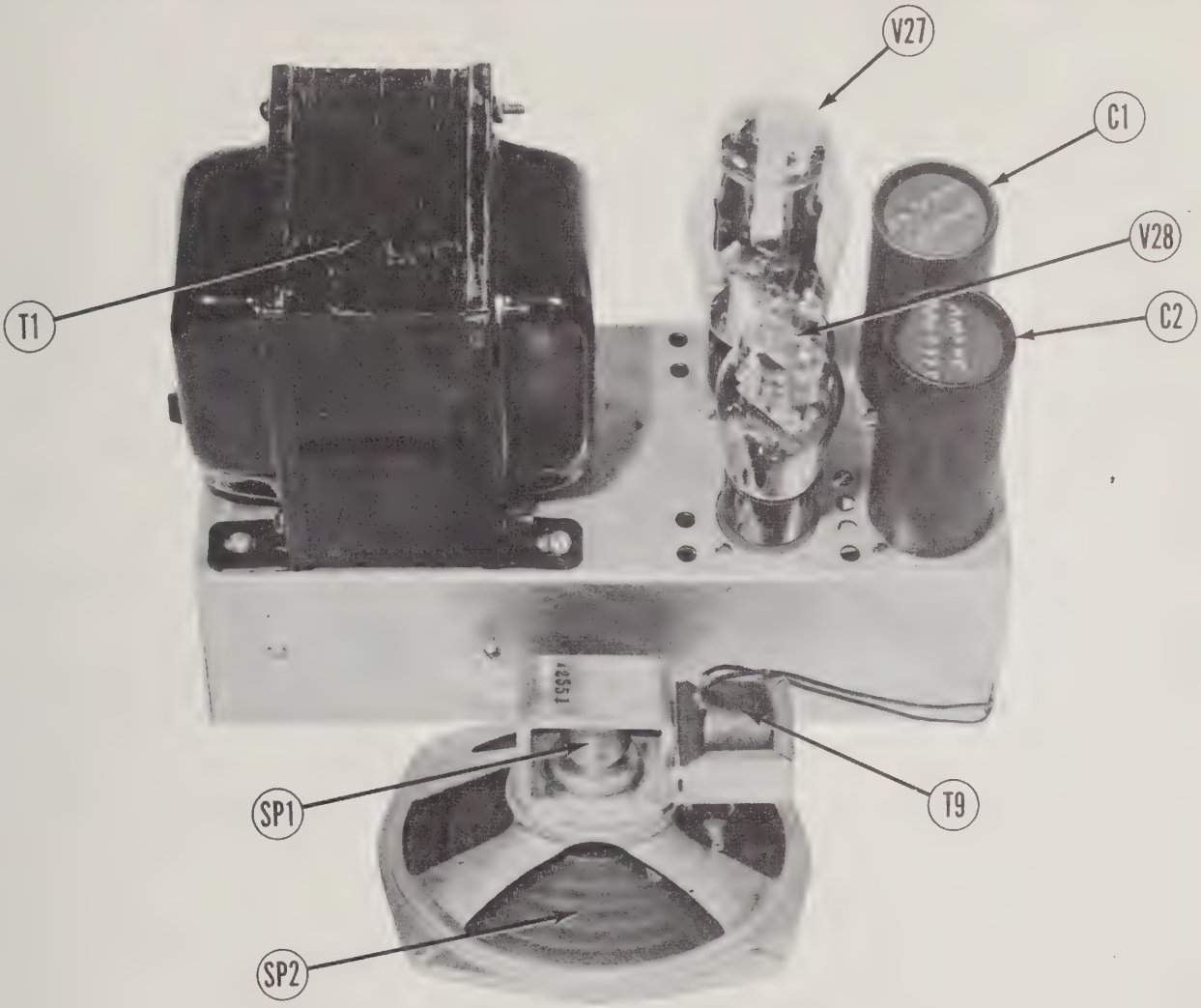
GEN. INST. TUNER - RIGHT SIDE



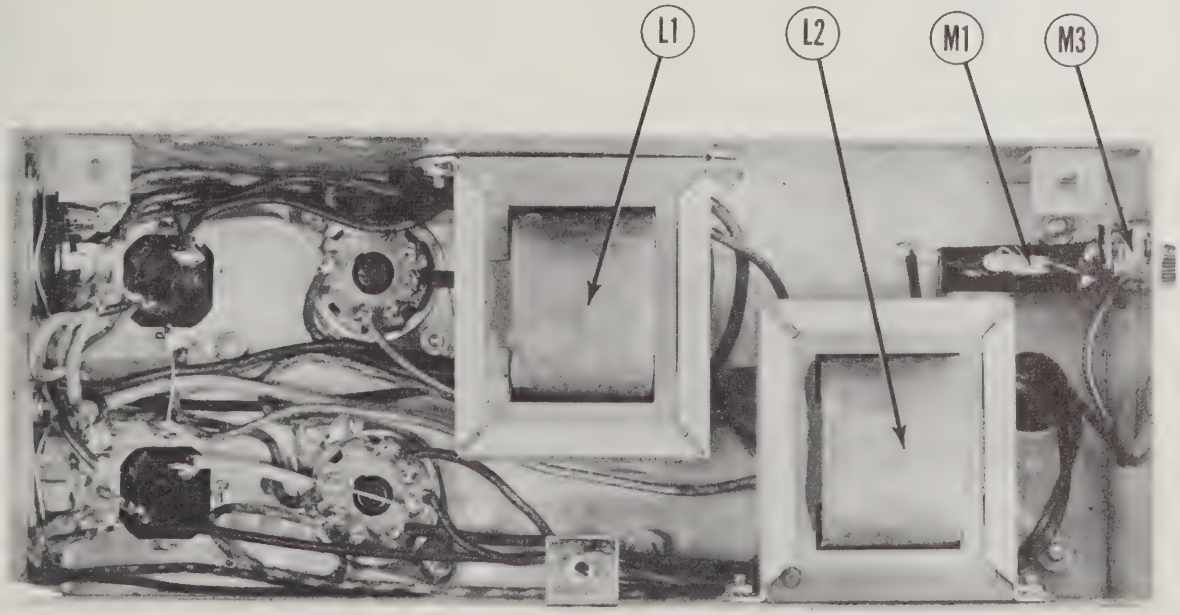
GEN. INST. TUNER - LEFT SIDE



CHASSIS BOTTOM VIEW-
TRANS. INDUCTOR AND ALIGNMENT IDENTIFICATION



POWER SUPPLY CHASSIS-TOP VIEW



POWER SUPPLY CHASSIS-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	92C2659	6AU6	7BK	Used in Sarkes Tarzian Tuner
B	"	92C3199	6J6	7BF	Used in General Instrument Tuner
V2A	Mixer		6AG5	7BD	Used in Sarkes Tarzian Tuner
B	"	92C3199	6J6	7BF	Used in General Instrument Tuner
V3A	Oscillator	92B597	6C4	6BG	Used in Sarkes Tarzian Tuner
B	"	92C3199	6J6	7BF	Used in General Instrument Tuner
V4	1st Video IF Amp.	92C2659	6AU6	7BK	
V5	2nd " " "	92C2659	6AU6	7BK	
V6	3rd " " "	92C2659	6AU6	7BK	
V7	4th " " "	92C2659	6AU6	7BK	
V8	Video Det. & AGC	92C2870	6AL5	6BT	
V9	Video Amp.	92A235	6AC7	8N	
V10	Sync. Sep., DC Rest. & Bias Rect.	92C2870	6AL5	6BT	
V11	1st Sound IF Amp.	92C2871	6BA6	7BK	
V12	2nd Sound IF Amp.	92C2659	6AU6	7BK	
V13	Limiter	92C2659	6AU6	7BK	
V14	Discriminator	92C2870	6AL5	6BT	
V15	AF Amp.	92C2874	6AT6	7BT	
V16	Audio Output Amp.	92E1418	25L6GT	7AC	
V17	Sync. Stabilizer	92C2871	6BA6	7BK	
V18	Sync. Clipper	92C2659	6AU6	7BK	
V19	Sync. Limiter & Hor. Discharge	92L3501	12AU7	9A	
V20	Hor. Discrim.	92C2870	6AL5	6BT	
V21	Hor. Reactance	92A235	6AC7	8N	
V22	Hor. Oscillator	92E1789	6K6GT	7S	
V23	Hor. Output	92L3266	6BG6-G	5BT	
V24	Hor. Damping	92E2019	5V4-G	5L	
V25	Vert. Osc. & Discharge	92B597	6C4	6BG	
V26	Vert. Output	92E1789	6K6GT	7S	
V27	Rectifier	92A234	5U4G	5T	
V28	"	92E1419	25Z6GT	7Q	
V29	Pulse Osc.		6BR7	8Q	
V30	Pulse Amp.	92L3266	6BG6-G	5BT	
V31	Projection Tube	92L3299	3NP4		

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SCOTT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	450	15A17	AF88J	UP3345		D14036	◓ Filter
B	30	450						▲ "
C2A	20	450	15L3438		UP7B212-1			▲ "
B	20	200						▲ "
C3A	20	450			UP222245		D14029	
B	20	475						▲ Vert. Out. Decoup.
C	20	475						■ Vert. Osc. Decoup.
D	20	475						◓ Filter
C4A	250	10	15L3439		UP7B084T		D14338	◓ Cent. Cont. Bypass
B	1000	6						▲ Vert. Cent. Cont. Bypass
C5A	20	475			UP222245		D14029	
B	20	475						◓ Video Low Pass Filter
C	20	450						▲ 4th V. IF Decoup.
D	20	475						RF Bypass "
								■ Sync. Stab. Screen Bypass
C6	50	50	15L3543	PRS50-50	BR505	M-50-50	TA-550	Vert. Out. Cathode
C7	25	25	15B795	PRS25-25	BR252A	M-25-25	TA-25	Bias Filter
C8	20	50		PRS50-20	BR205	M-25-50	TA-525	Driver Amp. Cathode
C9	680							Ant. Coupling-Cer.
C10	1.5							RF Coupling "
C11	680							RF Screen Byp. "
C12	680							RF Bypass "
C13	3.0							Osc. Fil. Byp. "
C14	50							RF Coupling "
C15	.30							" " "
C16	25							" " "
C17	.04							" " "
C18	680							Mixer Cath. Byp.-Cer.*
C19	5000							Mixer Screen Byp. Cer.
C20	1.5							Osc. Coupling "
C21	3							Fixed Trimmer "
C22	680							Osc. Feedback "
C23	1500		15L3459	1467-0015	1W5D15		1FM-215	RF Bypass "
C24	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	RF Bypass "
C25	300			1468-0003	5W5T3	MO.5-33	1FM-33	Ant. Coupling "
C26	300			1468-0003	5W5T3	MO.5-33	1FM-33	" " "
C27	1500		15L3459	1467-0015	1W5D15		1FM-33	AGC Filter "
C28	1.5							Neutralizing "
C29	500			1468-0005	1D5D5	MO.5-35	1FM-35	Fil. Bypass "
C30	1.5							Neutralizing "
C31	500			1468-0005	5W5T5	MO.5-35	1FM-35	RF Plate Decoup. "
C32	1500		15L3459	1467-0015	1W5D15		1FM-215	Mixer Grid Filter "
C33	500			1468-0005	5W5T5	MO.5-35	1FM-35	Osc. Plate Decoup. "
C34	170		15L3460	1468-0001	5W5T1	MO.5-31	1FM-31	RF Cath. Bypass "
C35	500			1468-0005	5W5T5	MO.5-35	1FM-35	Fil. Bypass "
C36	5		15A364					Feedback "
C37	5		15A364					" "
C38	500			1468-0005	5W5T5	MO.5-35	1FM-35	Fil. Bypass "
C39	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	Mixer Plate Decoup. "
C40	51		15L3458					Fixed Trimmer "
C41	100		15L3460	1468-0001	5W5T1	MO.5-31	1FM-31	IF Coupling "
C42	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	AGC Filter "
C43	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	1st V. IF Screen " Bypass "
C44	1500		15L3459	1467-0015	1W5T15		1FM-215	1st V. IF Fil. Byp."
C45	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	1st V. IF Plate " Decoup. "
C46	100		15L3460	1468-0001	5W5T1	MO.5-31	1FM-31	Video Coupling "
C47	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	AGC Filter "
C48	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	2nd V. IF Decoup. "
C49	1500		15L3459	1467-0015	1W5D15		1FM-215	2nd V. IF. Fil. Byp."
C50	100		15L3460	1468-0001	5W5T1	MO.5-31	1FM-31	Vide. IF Coupling "
C51	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	AGC Filter "
C52	1500		15L3459	1467-0015	1W5D15		1FM-215	3rd V. IF Fil.Byp. "
C53	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	3rd V. IF Decoup. "
C54	100		15L3460	1468-0001	5W5T1	MO.5-31	1FM-31	Video IF Coup. "
C55	51		15L3458					Fixed Trimmer "
C56	1500		15L3459	1467-0015	1W5D15		1FM-215	4th V. IF Fil. Byp."
C57	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	4th V. IF Cath.Byp."
C58	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	4th V. IF Decoup. "
C59	100		15L3460	1468-001	5W5T1	MO.5-31	1FM-31	Video IF Coup. " " " "
C60	100		15L3460	1468-001	5W5T1	MO.5-31	1FM-31	" " " "
C61	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	Bias Filter "
C62	1500		15L3459	1467-0015	1W5D15		1FM-215	Video Det. Fil.Byp."
C63	5							RF Bypass "
C64	390	500	15B799	1468-0004	5W5T4		1FM-34	" "
C65	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	Bias Filter "
C66	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	Contrast Cont. Byp."
C67	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	1st IF Cath. Byp. "
C68	1500		15L3459	1467-0015	1W5D15		1FM-215	1st IF Fil. Byp. "
C69	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	1st IF Screen Byp. "
C70	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	1st IF Plate Decoup."
C71	390	500	15B799	1468-0004	5W5T4		1FM-34	IF Coupling "
C72	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	2nd IF Cath. Byp. "
C73	1500		15L3459	1467-0015	1W5D15		1FM-215	2nd IF Fil. Byp. "
C74	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	2nd IF Screen Byp. "
C75	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	2nd IF Plate Decoup."
C76	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	3rd IF Screen Byp. "
C77	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	" " " "
C78	1500		15L3459	1467-0015	1W5D15		1FM-215	3rd IF Fil. Byp. "
C79A	100		15D2523	1468-0001	5W5T1	MO.5-31	1FM-31	Diode Load Cap. "
B	100			1468-0001	5W5T1	MO.5-31	1FM-31	" " "
C80	1500		15L3459	1467-0015	1W5D15		1FM-215	Disc. Fil. Byp. "
C81	200			1468-0002	5W5T2	MO.5-32	1FM-32	Sync. Stabl. Plate Bypass "
C82	390	500	15B799	1468-0004	5W5T4		1FM-34	Sync. Coupling "
C83	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	Hor. Sync. Coup. "
C84	2000	500		1467-002	1W5D2	MW.5-22	1FM-22	Integrator Net. "
C85	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	" " "
C86	5000		15L3462	1467-005	1D5D5	MW.5-25	1FM-25	" " "
C87	390	500	15B799	1468-0004	5W5T4		1FM-34	Hor. Coupling "
C88	680	500						Hor. Discharge "
C89	1000	500		1468-001	1W5D1	MW.5-21	1FM-21	Hor. Coupling "
C90	6000			1467-006	1D5D6		1FM-26	Vert. Osc. Grid "
C91	2700							Block Osc. Grid "
C92	.05	600	15L3467	684-05	DT685	ST-6-05	TM-15	AGC Filter "
C93	.05	600	15L3467	684-05	DT685	ST-6-05	TM-15	RF Bypass "
C94	.05	600	15L3467	684-05	DT685	ST-6-05	TM-15	Video Coupling "
C95	.05	600	15L3467	684-05	DT685	ST-6-05	TM-15	Sync. Coupling "
C96	.1	600	15L3468	684-.1	DT6P1	ST-6-1	TM-1	Pict.Tube Cath.Byp."
C97	.001	600	15L3545	684-001	DT6D1	ST-6-001	TM-21	Diode Filter "
C98	.001	600	15L3545	684-001	DT6D1	ST-6-001	TM-21	Audio Coupling "
C99	.1	600	15L3468	684-.1	DT6P1	ST-6-1	TM-1	AF Plate Decoup. "
C100	.005	600	15L3545	684-005	DT6D5	ST-6-005	TM-25	Audio Coupling "

CAPACITORS (CONT.)

C101	.25	200	15L3469	484-.25	DT4P25	ST-4-25	TC-2	Output Screen Byp.
C102	.005	600	15L3473	684-005	DT6D5	ST-6-005	TM-25	Output Plate Byp.
C103	.05	600	15L3467	684-05	DT685	ST-6-05	TM-15	Sync. Coupling
C104	.1	600	15L3468	684-.1	DT6P1	ST-6-1	TM-1	Sync. Stabl. Plate Decoup.
C105	.05	600	15L3467	684-05	DT685	ST-6-05	TM-15	Sync. Coupling
C106	.01	600	15L3541	684-01	DT6S1	ST-6-01	TM-11	Vert. Sync. Coup.
C107	.015	400	15L3464		DT4S15	ST-4-02		Fixed Trimmer
C108	.004	400	15L3544	484-004	DT6D4	ST-6-004	TM-24	AFC Filter
C109	.05	600	15L3467	684-05	DT685	ST-6-05	TM-15	" "
C110	.015	400	15L3464	484-015	DT4S15	ST-4-02		Phase Shifter
C111	.004	400	15L3544	484-004	DT6D4	ST-6-004	TM-24	AFC Coupling
C112	.05	600	15L3467	684-05	DT685	ST-6-05	TM-15	AFC Control Screen Byp.
C113	.004	400	15L3544	484-004	DT6D4	ST-6-004	TM-24	Hor. Osc. Grid
C114	.05	600	15L3467	684-05	DT685	ST-6-05	TM-15	Hor. Osc. Screen Byp.
C115	.01	600	15L3541	684-01	DT6S1	ST-6-01	TM-11	Hor. Coupling
C116	.05	600	15L3467	684-05	DT685	ST-6-05	TM-15	Hor. Out. Screen Byp.
C117	.1	600	15L3468	684-.1	DT6P1	ST-6-1	TM-1	Hor. Out. Cath. Byp.
C118	.035	600	15L3543					Damper Filter
C119	.05	600	15L3467	684-05	DT685	ST-6-05	TM-15	" "
C120	.05	600	15L3467	684-05	DT635	ST-6-05	TM-15	Vert. Discharge
C121	.1	600	15L3468	684-.1	DT6P1	ST-6-1	TM-1	Vert. Coupling
C122	.5	200	15E1135	484-.5	DT4P5	ST-2-5	TM-5	Bias Filter
C123	.25	200	15L3469	484-.25	DT4P25	ST-2-25	TM-2	" "
C124	.1	400		484-.1	DT4P1	ST-4-1	TM-1	Block Osc. Cath. Byp.
C125	.1	600	15L3468	684-.1	DT6P1	ST-6-1	TM-1	RF Bypass
C126	.01	600	15L3541	684-01	DTGS1	ST-6-01	TM-11	Sawtooth Coupling
C127	.015	400	15L3464	484-015	DT4S15	ST-4-02		Bias Filter
C128	.03	400		484-03	DT4S3	ST-4-03	TM-13	" "

*Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SCOTT PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	70L3387	D13-137	M-63-S	Volume-On-Off Control
B	Shaft			A	Not Req.	Attach to R1A per instructions
C	Switch			41	SW-A	" " " "
R2A	500KΩ	½	70L3379	D11-133	M-58-S	Contrast Control
B	Shaft			A	Not Req.	Attach to R2A per instructions
R3A	500KΩ	½	70L3379	D11-133	M-58-S	Brightness Control
B	Shaft			A	Not Req.	Attach to R3A per instructions
R4	5000Ω	4	70L3380			Focus Control
R5	20KΩ	4	70L3512			Horizontal Size
R6A	25KΩ	½	70L3505	D11-120	M-40-S	Horizontal Peaking
B	Shaft			A	Not Req.	Attach to R6A per instructions
R7	2½ Meg.	½	70L3504			Vertical Size
R8A	1 Meg.	½	70L3386	D11-137	M-61-S	Vertical Hole
B	Shaft			A	Not Req.	Attach to R8A per instructions
R9	5000Ω	2	70L3502	W-5000	43-5000	Vertical Linearity
R10	30Ω	2	70L3381	W-30	43-30	Horizontal Centering
R11	30Ω	2	70L3503		43-30CT	Vertical Centering-tapped @ 15Ω

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SCOTT PART No.	IRC PART No.	IDENTIFICATION CODES: All Resistors ± 10% Tolerance unless Otherwise Stated	
R12	22KΩ	½	70L3397	BTS-22K	Red-Red-Or.	RF Amp. Grid
R13	100Ω	1			Br.-Blk.-Br.	RF Amp. Cathode ±20%
R14	33KΩ	½		BTS-33K	Or.-Or.-Or.	RF Amp. Screen ±20%
R15	10KΩ	1		BTA-10K	Br.-Blk.-Or.	RF Amp. Plate ±20%
R16	1 Meg.	½	70L3406	BTS-1 Meg.	Br.-Blk.-Grn.	Mixer Grid ±20%
R17	82KΩ	½		BTS-82K	Gray-Red-Or.	Mixer Screen ±20%
R18	6800Ω	½		BTS-6800	Blue-Gray-Red	Osc. Plate ±20%
R19	22KΩ	½	70L3397	BTS-22K	Red-Red-Or.	Osc. Grid ±20%
R20	470Ω	½		BTS-470	Yl.-Vi.-Br.	Osc. Cathode ±20%
R21	150Ω	½			Br.-Grn.-Br.	RF Amp. Grid
R22	150Ω	½			Br.-Grn.-Br.	" " "
R23	1000Ω	½		BTS-1000	Br.-Blk.-Red	AGC Network ±20%
R24	2.2 Meg.	½	70L3408	BTS-2.2 Meg.	Red-Red-Grn.	" " ±20%
R25	2.2 Meg.	½	70L3408	BTS-2.2 Meg.	Red-Red-Grn.	" " ±20%
R26	10KΩ	½	70L3396	BTS-10K	Br.-Blk.-Or.	RF Coil Primary Shunt
R27	1000Ω	½		BTS-1000	Br.-Blk.-Red	RF Plate ±20%
R28	1 Meg.	½	70L3406	BTS-1 Meg.	Br.-Blk.-Grn.	Mixer Grid ±20%
R29	560Ω	½	70L3522	BTS-560Ω	Grn.-Blue-Red	RF Coil Secondary Shunt
R30	1000Ω	½		BTS-1000	Br.-Blk.-Red	Osc. Plate ±20%
R31	1000Ω	½		BTS-1000	Br.-Blk.-Red	" " ±20%
R32	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	Osc. Grid ±20%
R33	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	" " ±20%
R34	47Ω	½			Yl.-Vi.-Blk.	Osc. Cathode ±20%
R35A	5000Ω	5	70A69	AB-5000		Voltage Dropping-See Note 1
B	15KΩ	10	70L3617	AB-15K		" "
R36	47KΩ	½	70L3399	BTS-47K	Yl.-Vi.-Or.	1st Video IF Grid
R37	1000Ω	½	70L3393	BTS-1000	Br.-Blk.-Red	AGC Decoupling
R38	10Ω	½	70L3430		Br.-Blk.-Br.	Decoupling Network
R39	68Ω	½	70L3453		Blue-Gray-Blk.	1st Video IF Cathode
R40	6800Ω	½	70L3534	BTS-6800	Blue-Gray-Red	1st Video IF Screen
R41	10KΩ	½	70L3419	BTS-10K-5%	Br.-Blk.-Or.	2nd Video IF Grid ±5%
R42	68Ω	½	70L3453		Blue-Gray-Blk.	2nd Video IF Cathode
R43	1000Ω	½	70L3393	BTS-1000	Br.-Blk.-Red	AGC Network
R44	10Ω	1	70L3392		Br.-Blk.-Br.	Decoupling Network
R45	10Ω	1	70L3392		Br.-Blk.-Br.	" "
R46	22KΩ	½	70L3420	BTS-22K-5%	Red-Red-Or.	3rd Video IF Grid ±5%
R47	68Ω	½	70L3453		Blue-Gray-Blk.	3rd Video IF Cathode
R48	1000Ω	½	70L3393	BTS-1000	Br.-Blk.-Red	AGC Network
R49	10KΩ	½	70L3419	BTS-10K-5%	Br.-Blk.-Or.	4th Video IF Grid ±5%
R50	82Ω	½	70L3391		Gray-Red-Blk.	" " " " ±5%
R51	10Ω	1	70L3392		Br.-Blk.-Br.	Decoupling Network
R52	150KΩ	1		BTA-150K	Br.-Grn.-Yl.	Bias Network
R53	560Ω	1	70L3547	BTA-560	Grn.-Blue-Br.	Decoupling Network
R54	3.3 Meg.	½	70L3422	BTS-3.3 Meg.	Or.-Or.-Grn.	Bias Network ±20%
R55	470KΩ	½	70L3404	BTS-470K	Yl.-Vi.-Yl.	AGC Network
R56	470KΩ	½	70L3404	BTS-470K	Yl.-Vi.-Yl.	Diode Load
R57	1500Ω	½	70L3525	BTS-1500	Br.-Grn.-Red	Voltage Divider
R58	220KΩ	½	70L3403	BTS-220K	Red-Red-Yl.	" "
R59	3900Ω	½	70L3566	BTS-3900-5%	Or.-white-Red	Video Det. Load ±5%
R60	120KΩ	1		BTA-120K	Br.-Red-Yl.	Bias Network
R61	10KΩ	½	70L3396	BTS-10K	Br.-Blk.-Or.	" "
R62	78Ω	1			Vi.-Gray-Red	Video Amp. Plate ±5%
R63	78Ω	1			Vi.-Gray-Red	" " " ±5%
R64	940Ω	1			Wh.-Yl.-Red	" " "
R65	940Ω	1			Wh.-Yl.-Red	" " "
R66	10KΩ	½	70L3396	BTS-10K	Br.-Blk.-Or.	Video Isolation
R67	100KΩ	½	70L3401	BTS-100K	Br.-Blk.-Yl.	Picture Tube Grid
R68	1 Meg.	½	70L3406	BTS-1 Meg.	Br.-Blk.-Grn.	DC Restorer Diode Load ±20%
R69	33KΩ	½	70L3398	BTS-33K	Or.-Or.-Or.	Sync. Separator Load
R70	680KΩ	½	70L3456	BTS-680K	Blue-Gray-Yl.	Voltage Dropping
R71	470KΩ	½	70L3404	BTS-470K	Yl.-Vi.-Yl.	1st Sound IF Amp. Grid
R72	10Ω	½	70L3430		Br.-Blk.-Br.	1st Sound IF Amp. Cathode
R73	6800Ω	½	70L3534	BTS-6800Ω	Blue-Gray-Red	1st Sound IF Amp. Screen
R74	1000Ω	½	70L3393	BTS-1000Ω	Br.-Blk.-Red	1st Sound IF Plate Decoupling
R75	220KΩ	½	70L3403	BTS-220K	Red-Red-Yl.	2nd Sound IF Amp. Grid
R76	82Ω	½	70L3391		Gray-Red-Blk.	2nd Sound IF Amp. Cathode ±5%
R77	6800Ω	½	70L3534	BTS-6800	Blue-Gray-Red	2nd Sound IF Amp. Screen
R78	1000Ω	½	70L3393	BTS-1000	Br.-Blk.-Red	2nd Sound IF Plate Decoupling
R79	10KΩ	1	70L3427	BTA-10K	Br.-Blk.-Or.	Voltage Divider Network
R80	10KΩ	1	70L3427	BTA-10K	Br.-Blk.-Or.	" " "
R81	100KΩ	½	70L3401	BTS-100K	Br.-Blk.-Yl.	Discriminator Load
R82	100KΩ	½	70L3401	BTS-100K	Br.-Blk.-Yl.	" "
R83	68KΩ	½	70L3515	BTS-68K	Blue-Gray-Or.	De-emphasis
R84	10 Meg.	½	70L3409	BTS-10 Meg.	Br.-Blk.-Blue	1st Audio Amp. Grid ±20%
R85	560KΩ	½	70L3405	BTS-560K	Grn.-Blue-Yl.	1st Audio Amp. Plate
R86	47KΩ	½	70L3399	BTS-47K	Yl.-Vi.-Or.	1st Audio Amp. Decoupling
R87	680KΩ	½	70L3256	BTS-680K	Blue-Gray-Yl.	Power Output Grid
R88	4.7 Meg.	½	70L3530	BTS-4.7 Meg.	Yl.-Vi.-Grn.	Bias Network ±20%
R89	47Ω	½	70L3429		Yl.-Vi.-Blk.	Power Output Cathode
R90	6800Ω	½	70L3534	BTS-6800Ω	Blue-Gray-Red	Power Output Screen
R91	1000Ω	10	70E1235	AB-1000		B+ Filter
R92	1 Meg.	½	70L3406	BTS-1 Meg.	Br.-Blk.-Grn.	Sync. Stabilizer Grid ±20%
R93	2200Ω	1	70L3519	BTA-2200	Red-Red-Red	Voltage Dropping
R94	4700Ω	1	70L3520	BTA-4700	Yl.-Vi.-Red	Sync. Stabilizer Plate
R95	1000Ω	1	70L3589	BTA-1000	Br.-Blk.-Red	" " "
R96	1 Meg.	½	70L3406	BTS-1 Meg.	Br.-Blk.-Grn.	Sync. Clipper Grid ±20%
R97	150KΩ	½	70L3402	BTS-150K	Br.-Grn.-Yl.	Bias Network
R98	1 Meg.	½	70L3406	BTS-1 Meg.	Br.-Blk.-Grn.	" " ±20%
R99	560Ω	2	70L3522	BTS-560Ω	Grn.-Blue-Red	Sync. Clipper Plate
R100	1 Meg.	½	70L3406	BTS-1 Meg.	Br.-Blk.-Grn.	Sync. Limiter Grid ±20%
R101	4700Ω	1	70L3520	BTA-4700	Yl.-Vi.-Red	Sync. Limiter Plate
R102	470KΩ	½	70L3404	BTS-470K	Yl.-Vi.-Yl.	Hor. Discriminator Load
R103	470KΩ	½	70L3404	BTS-470K	Yl.-Vi.-Yl.	" " "
R104	1 Meg.	½	70L3406	BTS-1 Meg.	Br.-Blk.-Grn.	Sync. Isolation ±20%
R105	3900Ω	½	70L3526	BTS-3900	Or.-Wh.-Red	Bias Network
R106	100KΩ	½	70L3401	BTS-100K	Br.-Blk.-Yl.	" "
R107	470KΩ	½	70L3404	BTS-470K	Yl.-Vi.-Yl.	AFC Control Tube Grid
R108	560Ω	½	70L3527	BTS-560	Grn.-Bl.-Br.	" " " "
R109	47KΩ	½	70L3399	BTS-47K	Yl.-Vi.-Or.	Hor. Osc. Grid
R110	12KΩ	2	70L7533	BT-2-12K	Br.-Red-Or.	Hor. Osc. Screen-See Note 2
R111	5000Ω	10	70D2919	AB-5000		Hor. Osc. Plate
R112	6800Ω	½	70L3534	BTS-6800	Blue-Gray-Red	Differentiator
R113	220KΩ	½	70L3403	BTS-220K	Red-Red-Yl.	Hor. Discharge Grid
R114	680KΩ	½	70L3256	BTS-680K	Blue-Gray-Yl.	Hor. Discharge Plate
R115	6800Ω	½	70L3534	BTS-6800	Blue-Gray-Red	Peaking
R116	470KΩ	½	70L3404	BTS-470K	Yl.-Vi.-Yl.	Hor. Output Grid
R117	68Ω	½	70L3453		Blue-Gray-Blk.	Hor. Output Grid Suppressor
R118	100Ω	2	70L3535		Br.-Blk.-Br.	Hor. Output Cathode
R119	3000Ω	5	70L3600	AB-3000		Hor. Output Screen
R120	6000Ω	25		DHA-6000	Tapped @ 500Ω	Hor. Damping Load-See Note 4

PARTS LIST AND DESCRIPTIONS (Continued)

R121	22KΩ	½	70L3397	BTS-22K	Red-Red-Or.	Differentiating Network
R122	22KΩ	½	70L3397	BTS-22K	Red-Red-Or.	Integrator Network
R123	8200Ω	½	70L3523	BTS-8200	Gray-Red-Red	" "
R124	8200Ω	½	70L3523	BTS-8200	Gray-Red-Red	" "
R125	1.5 Meg.	½	70L3407	BTS-1.5 Meg.	Br.-Grn.-Grn.	Vert. Osc. Grid ±20%
R126	220KΩ	½	70L3403	BTS-220K	Red-Red-Yl.	Vert. Osc. Plate
R127	56KΩ	1	70L3524	BTA-56K	Grn.-Blue-Or.	" " "
R128	8200Ω	½	70L3523	BTS-8200	Gray-Red-Red	Peaking
R129	2.2 Meg.	½	70L3408	BTS-2.2 Meg.	Red-Red-Grn.	Vertical Output Grid ±20%
R130	1500Ω	½	70L3525	BTS-1500	Br.-Grn.-Red	Vertical Output Cathode
R131	5000Ω	5	70A69	AB-5000		Voltage Dropping
R132	3000Ω	5	70L3600	AB-3000		" "
R133	470Ω	2	70L3536	BT-2-470	Yl.-Vi.-Br.	Filter
R134	68KΩ	½	70L3515	BTS-68K	Blue-Gray-Or.	Bias Rect. Filter
R135	68KΩ	½	70L3515	BTS-68K	Blue-Gray-Or.	Bias Network
R136	15KΩ	½	70L3529	BTS-15K	Br.-Grn.-Or.	" "
R137	10Ω	½	70L3523		Br.-Blk.-Blk.	AFC Tube Cathode
R138	15KΩ	1	70L3550	BTA-15K	Br.-Grn.-Or.	AFC Tube Screen
R139	27.5KΩ	4				AFC Tube Plate-See Note 3
R140	10KΩ	½	70L3396	BTS-10K	Br.-Blk.-Or.	High Volt. Block. Osc. Cath.
R141	220KΩ	1		BTA-220K	Red-Red-Yl.	Bleeder
R142	390KΩ	1		BTA-390K-5%	Or.-Wh.-Yl.	Block. Osc. Grid ±5%
R143	330Ω	½			Or.-Or.-Br.	Parasitic Suppressor ±20%
R144	330KΩ	½		BTS-330K	Or.-Or.-Yl.	Driver Amp. Grid
R145	220KΩ	½		BTS-220K-5%	Red-Red-Yl.	" " " ±5%
R146	47KΩ	½	70L3399	BTS-47K	Yl.-Vi.-Or.	Bias Filter
R147	390Ω	2			Or.-Wh.-Br.	Driver Amp. Cathode
R148	10KΩ	½	70L3396	BTS-10K	Br.-Blk.-Or.	Isolation
R149	4700Ω	½		BTS-4700	Yl.-Vi.-Red	Mixer Coil Shunt ±20%
R150	47Ω	½	70L3429		Yl.-Vi.-Blk.	Mixer Cathode*

Note 1-Item 35A used in models employing Tarzian RF Tuner while Item 35B is used with Gen. Instrument Tuner.
Note 2-Some models use two 24KΩ 1 Watt resistors in parallel for this application.
Note 3-Some models use two 56KΩ 2 Watt resistors in parallel while others use four 110KΩ 1 Watt resistors in parallel in this application.
Note 4-Set slider of IRC replacement 500Ω from one end.
*Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA SCOTT PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
	PRI.	SEC. 1	SEC. 2	SEC. 3				
T1	1.9 Amp. @ 117V.	120 MA. @ 720V. 115 MA. @ 340V.	.6 Amp. @ 25 V.	2 Amp. @ 5V.	91L3319			
			SEC. 4	SEC.5				
			3 Amp. @ 5V.	9 Amp. @ 6.3V.				

TRANSFORMER (SWEEP CIRCUITS)

ITEM No	RATING DC RESISTANCE SEC.	PRI.	REPLACEMENT DATA SCOTT PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	NOTES
T2	43Ω tapped @ 22Ω	42Ω tapped @ 10Ω	91L3264				Hor. Disc. Trans.
T3	165Ω	920Ω	91L3317	A-8121	TV-24A88	A-4000	Vert. Block. Osc. Trans.
T4	2000Ω	10.6Ω tapped @ .6Ω	91L3607				Hor. Output Trans.
T5	600Ω	6.5Ω	91L3318	A-8115	TV-24S86		Vert. Output Trans.
T6A	65Ω						Vert. Defl. Yoke
B	17Ω						Hor. Defl. Yoke
T7	11KΩ						Focus Coil
T8	180Ω	130Ω					High Volt. Block. Osc. Trans.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	SEC.	DC RES. PRI.	SEC.	REPLACEMENT DATA SCOTT PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
T9	3000Ω	3.1Ω	260Ω	.6Ω	Part of 85L3515A	A-3878*	T22845*	A-2928*	*Bend down mounting tabs, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA SCOTT PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	VC IMP.				
SP1	PM	3.1Ω	85L3515A	ST-105	52A1	
	CONE DIA.	VC DIA.				
SP2	8-1/8"	1.16"				

FILTER CHOKE

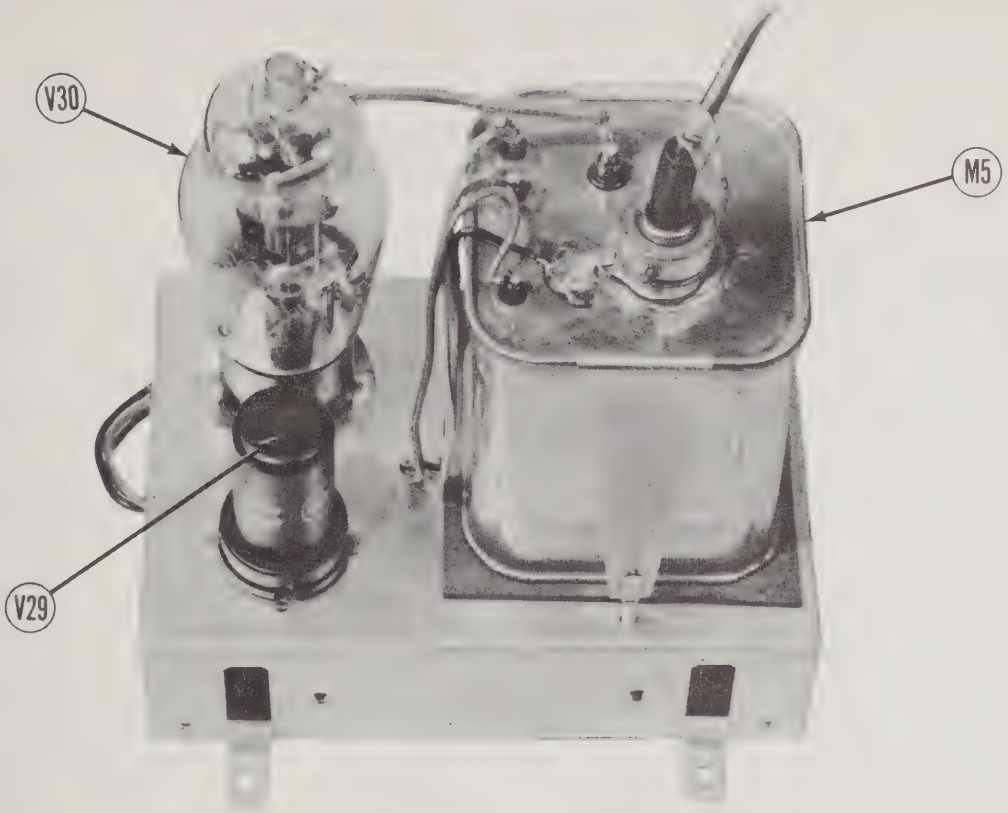
ITEM No.	RATINGS TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA SCOTT PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	INSTALLATION NOTES
L1	120MA	110Ω	3 Henries	17L3312	C-2303			
L2	90MA	110Ω	3 Henries	17L3312	C-2303			

COILS (RF-IF)

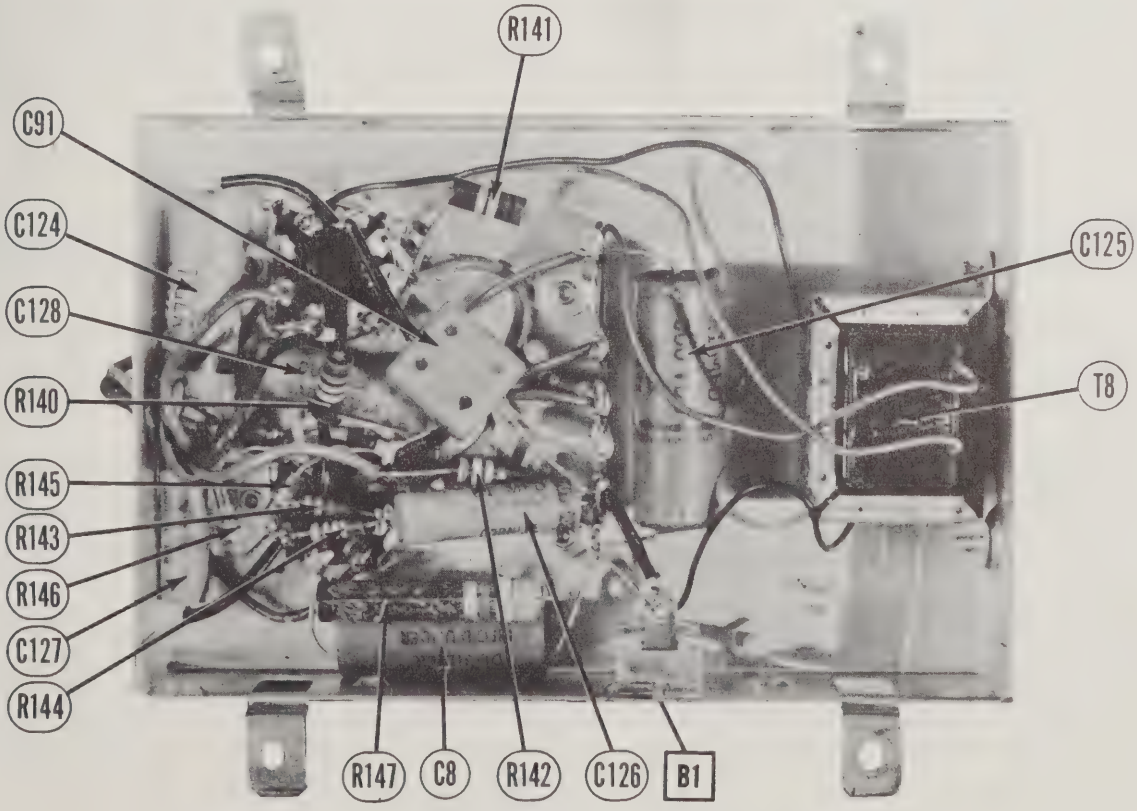
ITEM No.	USE	DC RES. PRI.	SEC.	REPLACEMENT DATA SCOTT PART No.	MEISSNER PART No.	NOTES
L3	Antenna Input	0Ω				Items L3, L4, L5 and L6 used in Sarkes Tarzian Tuner
L4	Ant. Input	0Ω				
L5	(High Band)	0Ω				
L6	Fil. Choke	0Ω				
L7	Ant. Input	0Ω				Items L7, L8, L9, L10, L11, L12 and L13 used in General Instrument Tuner
L8	RF Low Band	0Ω				
L9	RF High Band	0Ω				
L10	Mixer Low Band	0Ω				
L11	Mixer High Band	0Ω				
L12	Osc. Low Band	0Ω				
L13	Osc. High Band	0Ω				
L14	Fil. Choke	0Ω		17L3378		
L15	1st IF Tran.	.1Ω	.1Ω	20L3345		
L16	Fil. Choke	0Ω		17L3378		
L17	2nd Video IF	.5Ω		20L3346		
L18	Fil. Choke	0Ω		17L3378		
L19	3rd Video IF	.4Ω		20L3347		
L20	Fil. Choke	0Ω		17L3378		
L21	Plate Choke	2Ω		17L3484		
L22	4th Video IF	.4Ω	.1Ω	20L3348		
L23	Fil. Choke	0Ω		17L3378		
L24	Plate Choke	2Ω		17L3484		
L25	Video Det. Input	.3Ω		20L3487		
L26	Fil. Choke	0Ω		17L3378		
L27	Video Peak.	3.5Ω		17L3482		100 Microhenry wound on 6800Ω resistor
L28	Video Peak.	4.5Ω		17L3481		180 Microhenry wound on 39KΩ resistor
L29	Video Peak.	5Ω		17L3483		270 Microhenry
L30	Fil. Choke	0Ω		17L3378		
L31	2nd Sound IF	.3Ω		20L3384		
L32	Fil. Choke	0Ω		17L3378		
L33	3rd Sound IF	.1Ω		20L3349		
L34	Fil. Choke	0Ω		17L3378		
L35	Sound Disc.	.1Ω	.1Ω	20L3350		
L36	Horizontal Linearity	40Ω		20L3344		

MISCELLANEOUS

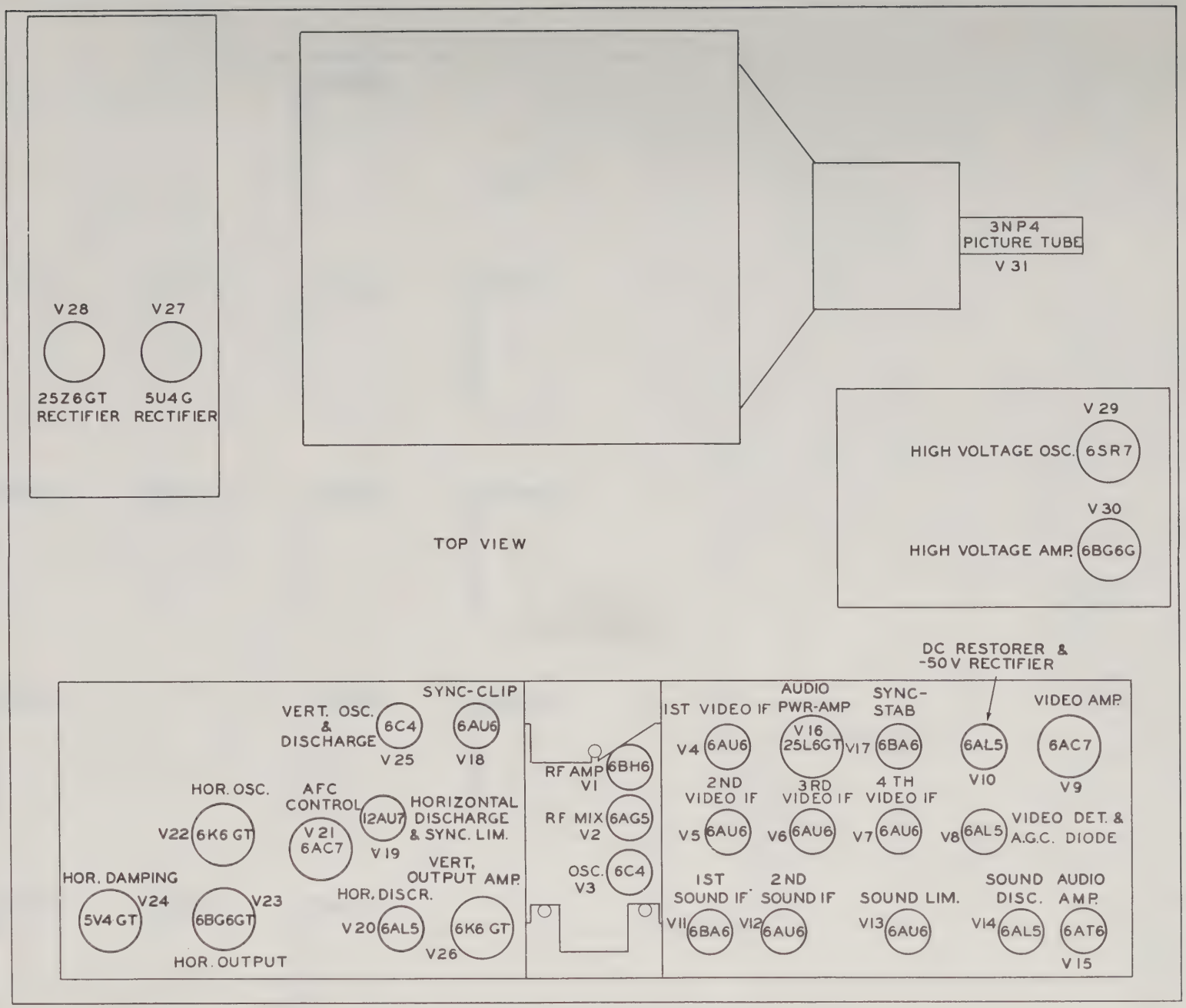
ITEM No.	PART NAME	SCOTT PART No.	NOTES
M1	Fuse-4 Amp. 3AG	37E1163	
M2	Socket for 3NP4	82L3330	
M3	AC Receptacle	67L3364	
M4	AC Cord	96L3339	
M5	Hi. Volt. Trans. & Rectifiers		Part of 2L3298
B1	H.V. Blocking Osc. Trimmer		Mica Trimmer 110-560 MMF.
	RF Tuner-Gen. Inst.	2L3593	
	" " -Sarkes Tarzian		
	Phillips Projection Unit	2L3297	
	High voltage power supply	2L3298	
	Iron Core Hor. Linearity	24L3358	
	Iron Core IF	24L3357	
	Cabinet Cover-Masonite	26L3485	
	Spring for Gauge Hinge	86L3581	
	Ant. and Audio Terminal	8L3337A	
	Light Shield-Right	97L3555	
	Light Shield-Left	97L3556	
	Mirror 10" x 14"	97L3321	
	Screen-RCA202P1	97L3377	
	Screen-Kodak	97L3406	
	Cabinet-Mahogany	11L3322	
	Cabinet-Walnut	11L3323	
	Cabinet-Bleached	11L3324	
	Knob-Large Copper	47L3599	
	Knob-Large Chrome	47L3608	
	Knob-Fine Tuning	47L3597	
	Knob-Small	47B659	
	Fuse Holder	67A136	



HIGH VOLTAGE SUPPLY-TOP VIEW

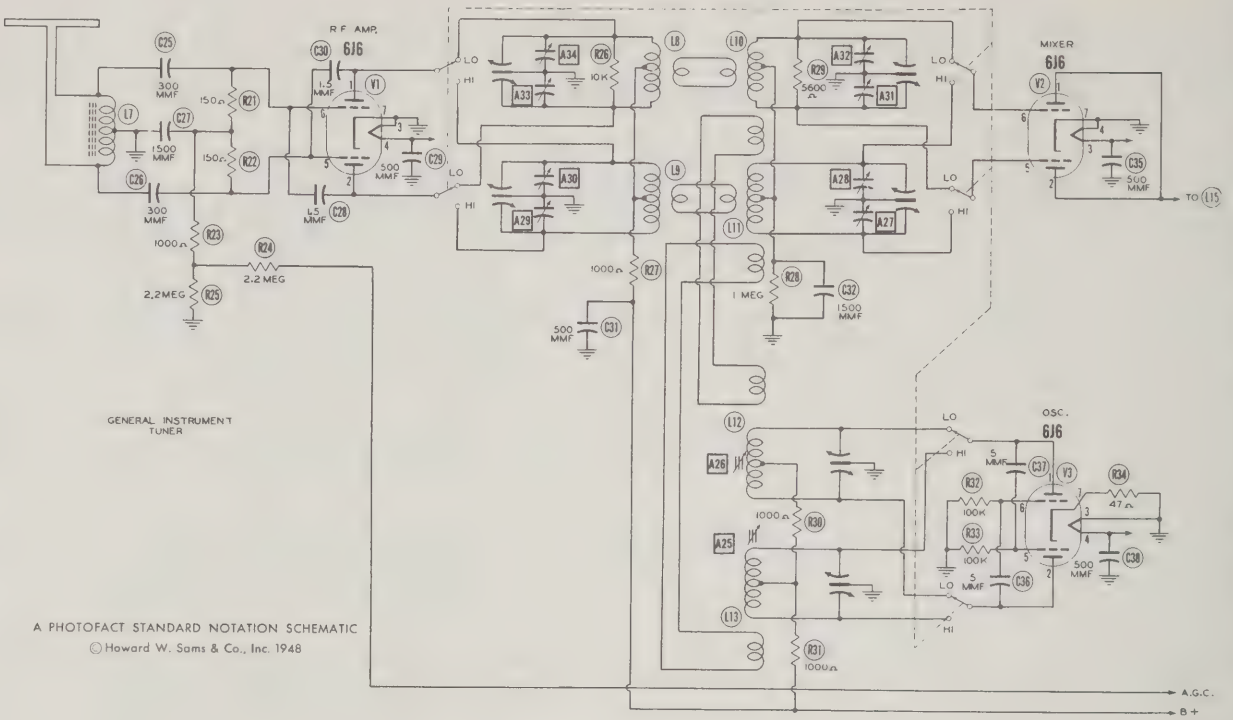


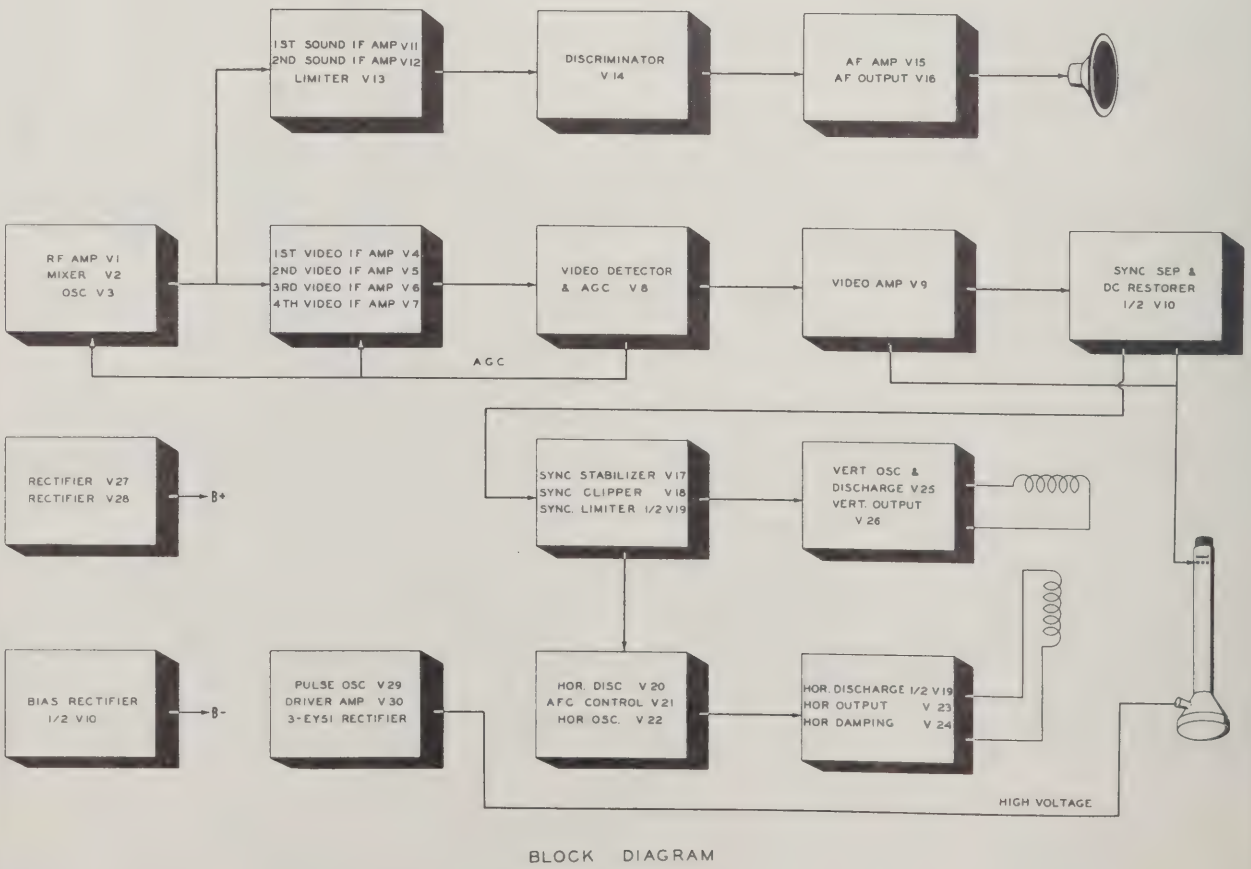
HIGH VOLTAGE SUPPLY-BOTTOM VIEW



TUBE PLACEMENT CHART

SCOTT MODELS
6T11, 6T11A





BLOCK DIAGRAM

ADJUSTMENT OF OPTICAL SYSTEM

This operation should be necessary only when replacing the 3NP4 or the focus and deflection system.

Remove the back screen and insert a service AC cord. Remove the screen slide and black cover. Loosen the shipping screws in the optical box, the slide in the slotted lugs so the allen head set screws (B4) rest on the lugs, supporting the weight of the box. Replace the screen, but temporarily leave the black cover off.

Before turning on the set, turn both the contrast control and the brilliance control full off. After about one minute warm up advance the brilliance control for a medium bright raster.

Adjust the electrical focus control on the front panel for best possible focus. This is necessary since no amount of mechanical focusing will make them sharp on the screen if the lines are not sharp on the face of the tube.

Before making any mechanical adjustments loosen the lock screws.

The overall mechanical focus control (B3) should be adjusted for best focus at the center of the screen. Occasionally check the electrical focus to be sure it is right.

Increase the horizontal and vertical size controls and observe the back of the screen. If the four corners are not equally spaced from the edges of the picture tube image, adjust the allen set screws (B4) until the image is centered.

Adjust the electrical focus and (B3) for the sharpest possible focus at the center of the screen.

(B5) may be adjusted for best focus at the two sides of the screen. This may be checked most easily by fastening a piece of thin white paper to the back side of the screen so the picture may be observed from the rear. It will be necessary to readjust (B3) occassionally for best overall focus.

The top and bottom of the picture is brought to equal focus by means of (B6).

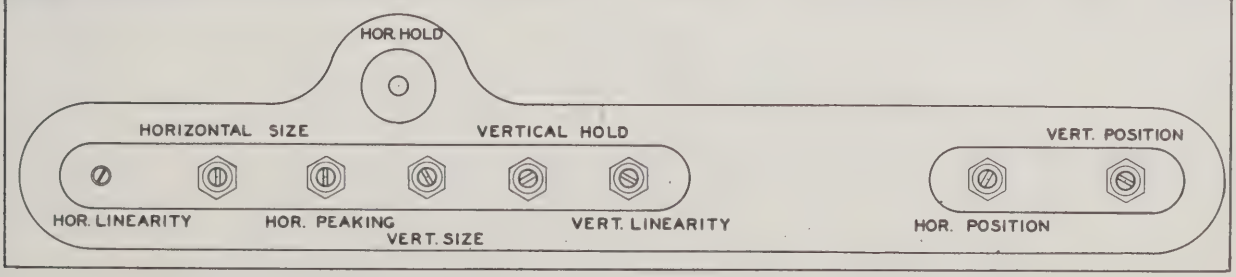
If the picture does not set horizontally, the four knurled mounting nuts may be loosened to allow the entire assembly to be turned. After the mechanical adjustments have been made, any further centering should be done with the electrical centering controls. All adjustments other than those mentioned above are factory pre-set and should not be moved.

DISSASSEMBLY INSTRUCTIONS

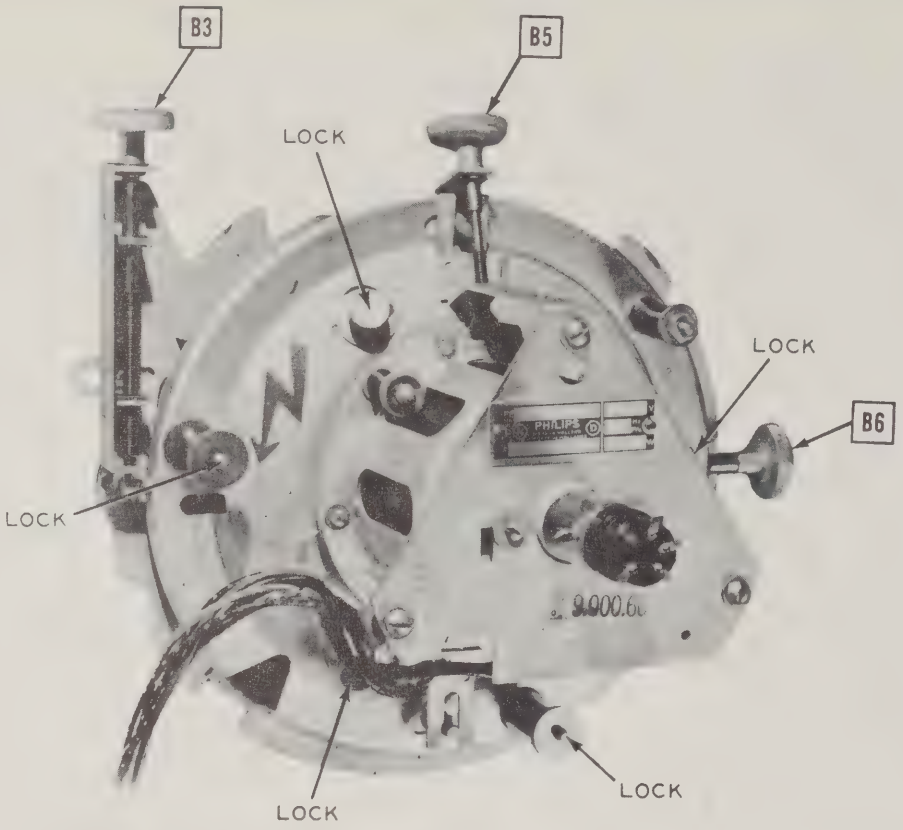
1. Remove screws holding back and remove back.
2. Raise screen in operating position. Loosen screw on stop behind screen and remove stop. Slide screen completely forward and remove.
3. Loosen six screws holding top. Lift forward edge and slide out.
4. Unplug speaker cable.
5. Remove three screws holding speaker and remove.
6. Unplug picture tube socket, both plugs on low voltage power supply, high voltage power supply cable and deflection and focus cable from main chassis.
7. Loosen three screws holding projection unit and slide out of cabinet.
8. Loosen four wood screws holding high voltage power supply chassis and slide out rear of cabinet. The projection and high voltage units are connected together with the high voltage lead. Use care not to pull on this lead to prevent damage to the units.
9. USE EXTREME CARE NOT TO STRIKE THE NECK OF THE PICTURE TUBE WHICH PROJECTS FROM UNIT.
10. Remove two screws holding antenna terminal strip.
11. Remove three screws from bottom of cabinet holding the low voltage power supply and remove chassis.
12. Remove five knobs from front panel.
13. Remove two wood screws from back side of main chassis. Slide chassis back and lift out of cabinet.

REMOVAL OF PROJECTION TUBE

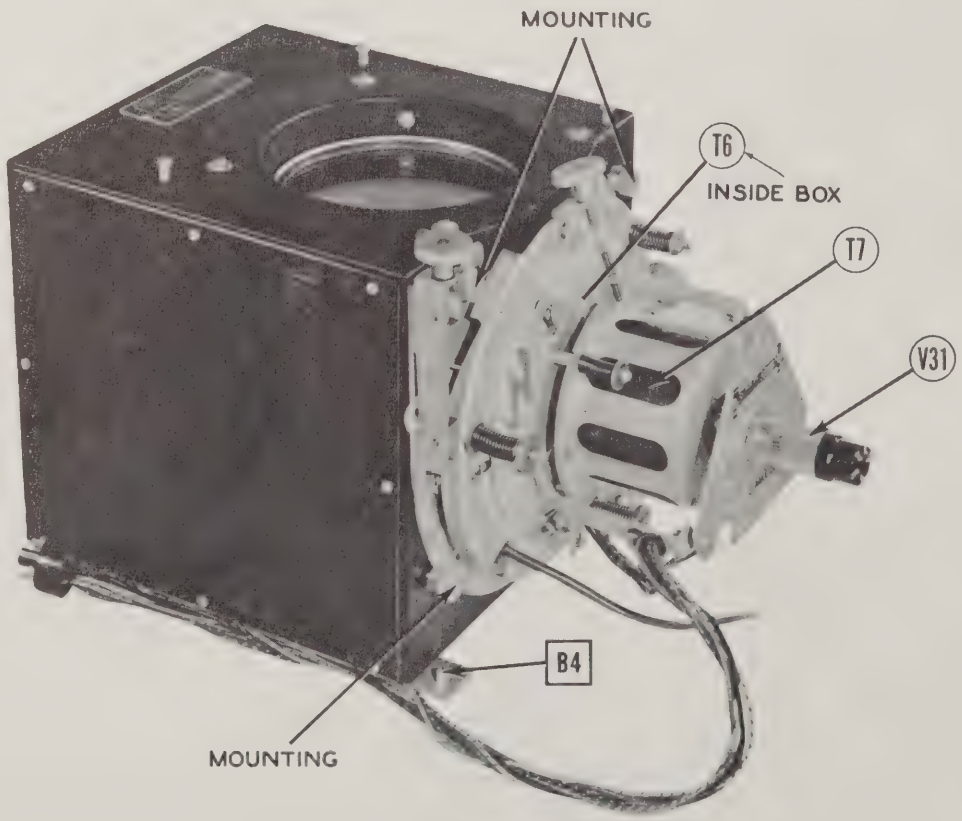
1. Remove back from cabinet.
2. Unplug picture tube socket and deflection and focus cable from main chassis.
3. Remove three screws, hold projection unit and slide unit out of rear of cabinet.
4. Loosen four locking thumb nuts while holding tube mounting bracket.
5. Turn mounting bracket counter-clockwise just enough to align slots with locking thumb nuts. Carefully slide out of box. Use extreme care to prevent damage to reflecting mirror and tube.
6. Loosen bolt in plastic clamp on high voltage plug. Carefully slip plug out of tube with a rocking motion.
7. Loosen screw in clamp on neck. Slide tube forward out bracket.
8. Remove rubber band and shade from tube.



SERVICE CONTROL ADJUSTMENT LOCATION

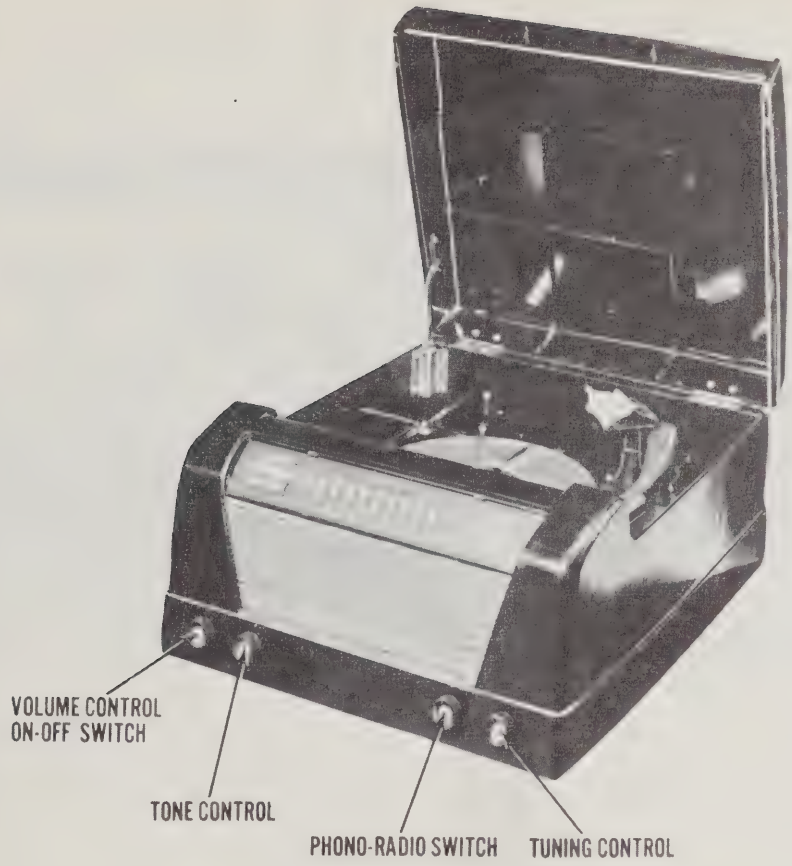


DEFLECTION AND FOCUS COIL ASSEMBLY



PROJECTION UNIT

SILVERTONE MODEL
8080 (Ch. 101.852)



SILVERTONE MODEL
8080 (Ch. 101.852)

SILVERTONE MODEL 8080

TRADE NAME	Silvertone, Model 8080 (Ch. 101.852)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan St., Chicago, Ill.
TYPE SET	AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 14Q7 Converter, 12BA6 IF Amp., 14B6 Det.-AVC-AF, 50A5 Power Output, 35Y4 Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	540-1630KC RATING .23 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 6 (grid) of 14Q7. Low side to B-.	455KC	Tuning cap. fully closed	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2		Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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DATE 12/48-#4822-20 SET #52-FOLDER #20

PARTS LIST AND DESCRIPTIONS

SILVERTONE MODEL 8080

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	14Q7	14Q7	8AL	
2	IF Amp.	12BA6	12BA6	7BK	
3	2nd Det.-AVC-AF	14B6	14B6	8W	
4	Power Output	50A5	50A5	6AA	
5	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	60	150	R65609	PRSA150/50-50	EZ5515	DSB-2x50-150	TA-505	Filter-Red-See Note
B	60	150						" -Blue
7	.05	400		484-05	GT4S5	ST-4-05	TC-15	Line Filter
8	.05	200		484-05	GT4S5	ST-4-05	72P1	Line Isolation
9	.02	400		484-02	GT4S2	ST-4-02	TC-12	Output Plate Bypass
10	.005	600		684-005	GT6D5	ST-6-005	TC-25	Audio Coupling
11	.005	600		684-005	GT6D5	ST-6-005	TC-25	" "
12	.001	600		684-001	GT6D1	ST-6-001	TC-21	Tone Comp.
13	.05	200		484-05	GT2S5	ST-4-05	TC-15	Bias Filter
14	.005	600		684-005	GT6D5	ST-6-005	TC-25	" "
15	.05	200		484-05	GT2S5	ST-4-05	TC-15	Phono Isolation
16	.05	200		484-05	GT2S5	ST-4-05	TC-15	RF Bypass Pwr. Supply
17	.05	200		484-05	GT2S5	ST-4-05	TC-15	AVC Filter
18	.01	400		484-01	GT4S1	ST-4-01	TC-11	Osc. Tuning Cap. Isol.
19	100	300		1468-0001	5W5T1	MO.5-31	1FM-31	Output Grid Bypass-Cer.
20	100	300		1468-0001	5W5T1	MO.5-31	1FM-31	Osc. Grid Cap. "

Note-Some models use 40-40-150V in this application, replacement same as Item 6.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	500KΩ	½	R65622	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 21A per instructions
C	Switch		" "	41	SW-A	" " " " "
22A	2 Meg.	½	R65621	D13-139	M-66-Z	Tone Control
B	Shaft		Not Req.	A	Not Req.	Attach to 22A per instructions

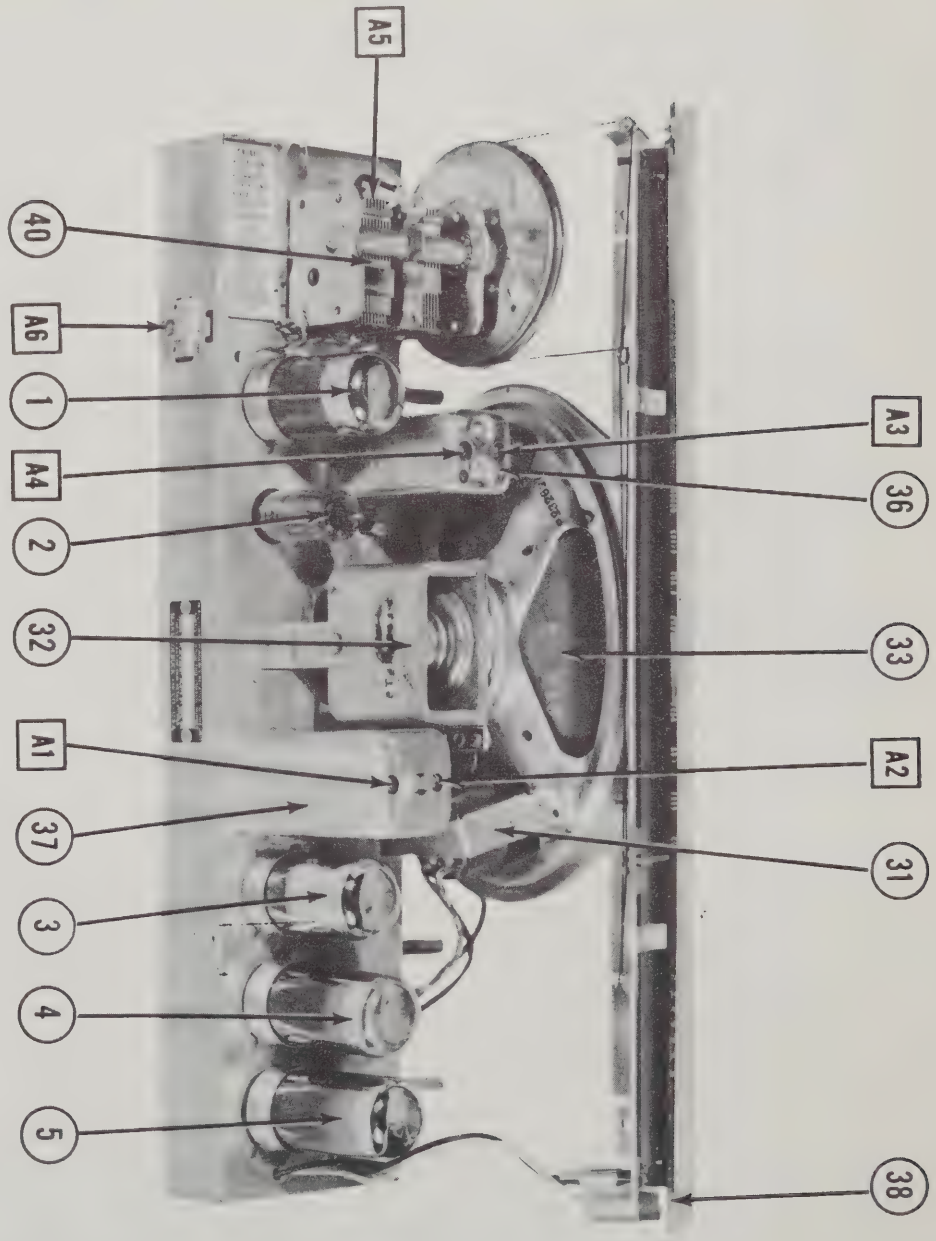
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	IDENTIFICATION CODES
23	15KΩ	½		BTS-15K	Br.-Grn.-Or. Osc. Grid
24	5600Ω	½		BTS-5600	Grn.-Blue-Red " "
25	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Bias
26	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
27	390KΩ	½		BTS-390K	Or.-White-Yl. Output Grid
28	1200Ω	1		BTA-1200	Br.-Red-Red Filter
29	25Ω	1	R40232	BW-1-27	Red-Grn.-Blk. Surge Limiter
30	680KΩ	½		BTS-680K	Blue-Gray-Yl. AF Diode Load

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SILVERTONE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
31	2100Ω	3.5Ω	400Ω tapped @ 21Ω	1.0Ω	R66444	A-3330		A-3031	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: SILVERTONE PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
32	FIELD PM	VC IMP. 3.5Ω	R65634			
33	CONE DIA. 5"x7"	VC DIA. 3/4"				

R F COILS

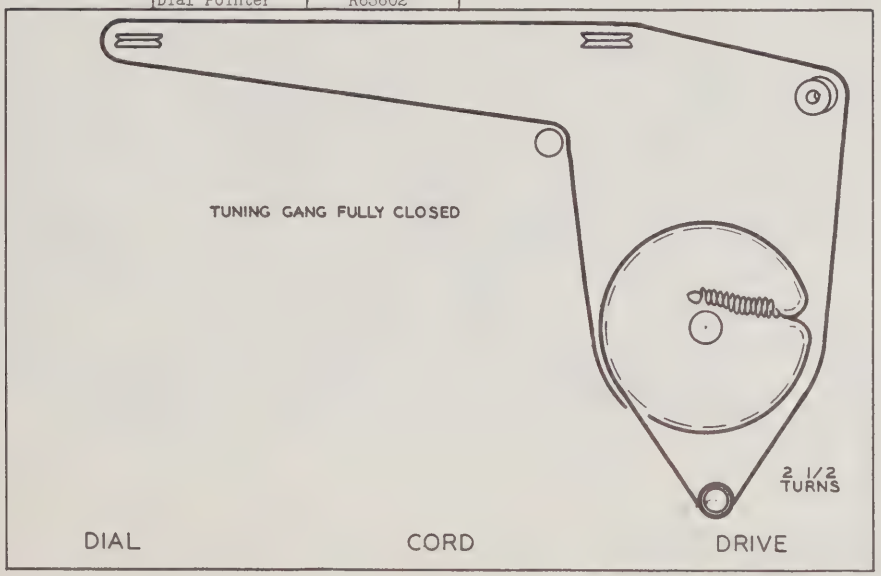
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: SILVERTONE PART No.	MEISSNER PART No.
34	Loop Ant.	0Ω	1.7Ω	R65644	
35	Osc. Coil		8.6Ω	R65608	14-1060
36	Input IF	19Ω	17.5Ω	R65606	16-6666
37	Output IF	9.5Ω		R65607	

DIAL LIGHT

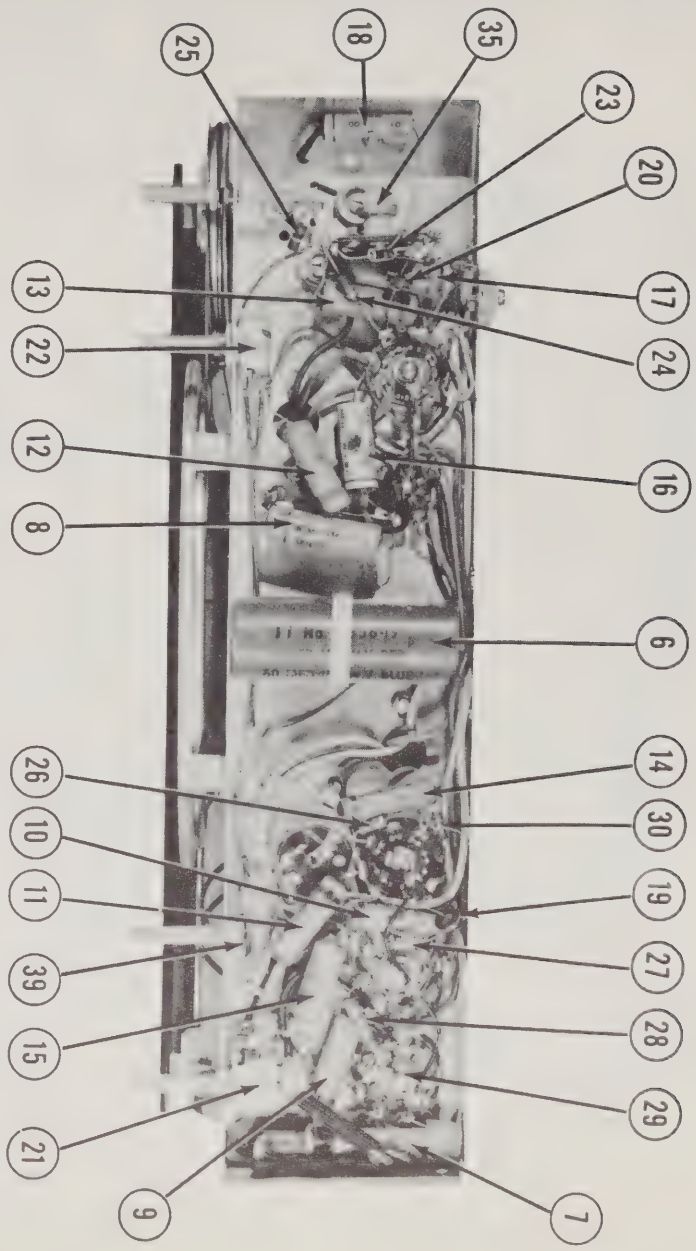
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: SILVERTONE PART No.		INSTALLATION NOTES
38	Bayonet	6-8	0.15	Brown			Type 47

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
39	Switch	R65623	Radio-Phono
40	2 Gang Var. Cap.	R66430	(13-447MMF, 32-195MMF)
	Cabinet	R65636	
	Dial	R65604	
	Dial Pointer	R65602	



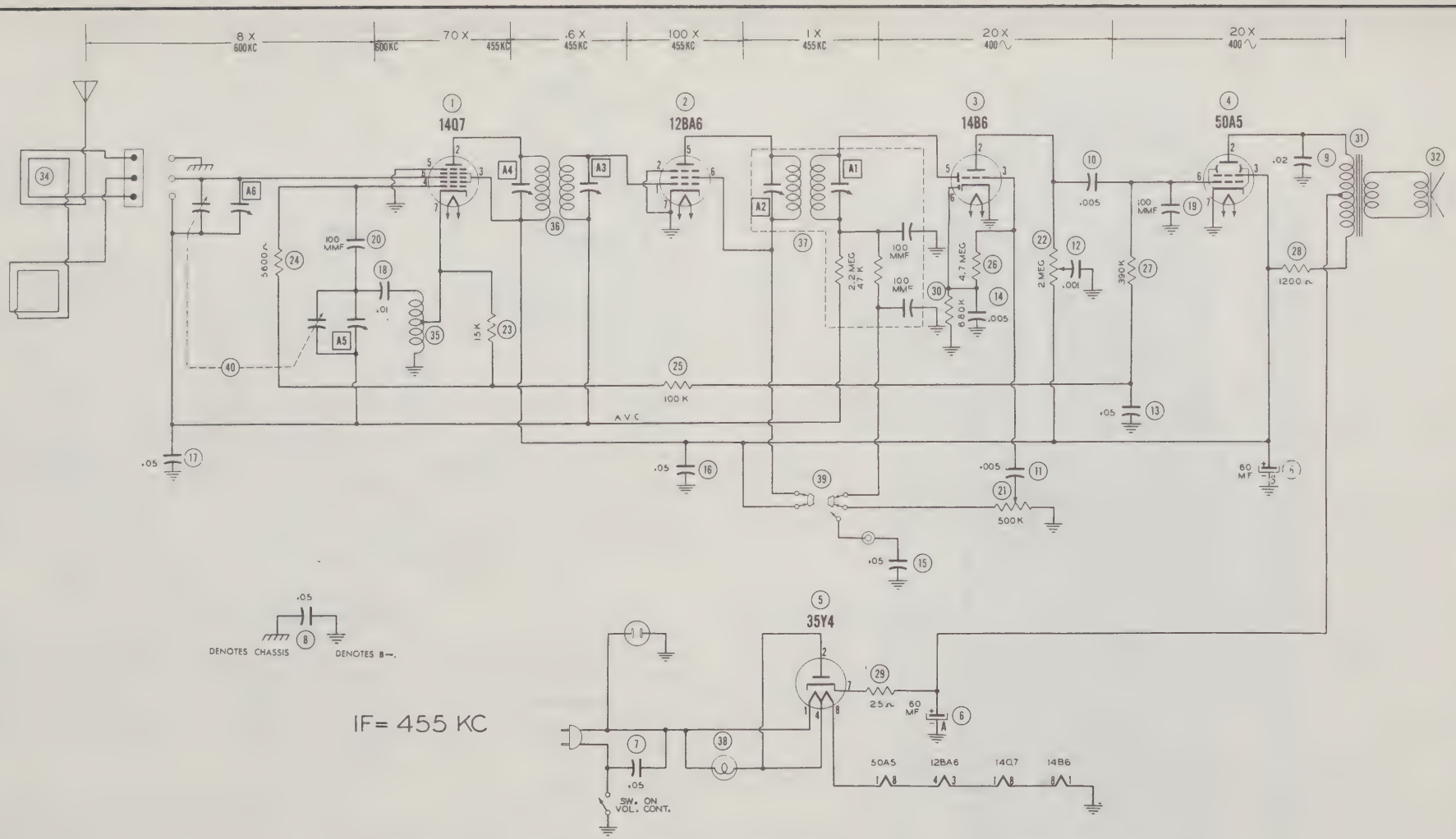
CHASSIS—BOTTOM VIEW



DATE 12/48-#4822-20 SET #52-FOLDER #20

SILVERTONE MODEL 8080

SILVERTONE MODEL 8080



VOLTAGE READINGS

RADIO-PHONO SWITCH IN RADIO POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	.25VAC	87VDC	87VDC	-7.5VDC$	0V.	-.5VDC	0V.	12VAC
2	12BA6	-.5VDC	0V.	25VAC	37VAC	87VDC	87VDC	0V.	-
3	14B6	0V.	35VDC	-.8VDC	0V.	-.4VDC	-.7VDC	0V.	12VAC
4	50A5	90VAC	105VDC	87VDC	0V.	-3.4VDC	-1.4VDC	0V.	37VAC
5	35Y4	117VAC	112VAC	120VDC	112VAC	123VDC	0V.	120VDC	90VAC

$TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	25Ω	90KΩ	90KΩ	20KΩ	0Ω	2.7 Meg.	1Ω	12Ω
2	12BA6	2.7 Meg.	0Ω	25Ω	38Ω	90KΩ	90KΩ	0Ω	-
3	14B6	0Ω	2 Meg.	5.4 Meg.	0Ω	550KΩ	680KΩ	0Ω	12Ω
4	50A5	90Ω	90KΩ	90KΩ	INF.	120KΩ	510KΩ	0Ω	3Ω
5	35Y4	120Ω	115Ω	90KΩ	115Ω	90KΩ	INF.	90KΩ	90Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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4822-20

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TELE-TONE MODEL 185
(Ch. Series AH) BATTERY-LINE OPERATED

TELE-TONE MODEL 185
(Ch. Series AH) BATTERY-LINE OPERATED

TELE-TONE MODEL 185

TRADE NAME	Tele-Tone Model 185 (Ch. Series AH)
MANUFACTURER	Tele-Tone Radio Co., 540 W. 58th St., New York 19, N.Y.
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 1R5 Converter, 1U4 IF Amp., 1U5 Det.-AVC-AF, 384 Power Output, 117Z3 Rectifier.
POWER SUPPLY RATING	105-125 Volts AC-DC or 4.5 Volts "A" Supply and 67.5 Volts "B" Supply .14 Amp. @ 117 Volts AC or 105MA @ 4.5 Volts DC and 7.5MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	532-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with low side of the signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to large stator of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200 MMFD to reduce hum modulation.
2		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver.
3		"	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.
4		"	600KC	"	"	A7	Rock tuning cap. and adjust for maximum output. Repeat Steps 2, 3 & 4 until no further improvement can be made.

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DATE 12/48-#4822-21 SET #52-FOLDER #21

PARTS LIST AND DESCRIPTIONS

TELE-TONE MODEL 1e5

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1U4	1U4	6AR	
3	2nd Det.-AVC-AF	1U5	1U5	6BW	
4	Power Output	3S4	3S4	7BA	
5	Rectifier	11Z3	11Z3	4BR	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TELE-TONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	CE-17	AF44D40A*	EDL4415	DSB-2x40-150	TA-440	Filter-Green
B	40	150						" -Red
C	200	10		PRS150/40	BRH1225	M-250-12	UHC-212	Fil. Bypass-Yellow
7	.05	400	CP-503-1	484-05	GT4S5	ST-4-05	TC-15	Rectifier Bypass
8	.1	200	CP-104-1	484-.1	GT2P1	ST-2-1	72P2	Line Isolation
9	.005	400	CP-502-2	484-005	GT6D5	ST-6-005	TC-25	Output Plate Bypass
10	.05	200	CP-505-2	484-05	GT2S5	ST-4-05	TC-15	Filament Bypass
11	.05	200	CP-505-2	484-05	GT2S5	ST-4-05	TC-15	" "
12	.01	600	CP-103-2	684-01	GT6S1	ST-6-01	TC-11	IF Grid Filter
13	.01	400	CP-103-2	484-01	GT4S1	ST-4-01	TC-11	Osc. Decoupling
14	.05	200	CP-505-2	484-05	GT2S5	ST-4-05	TC-15	AVC Filter
15A	2000	300	‡	484-002	GT6D2	ST-6-002	TC-22	Audio Coupling
B	100	300		1468-0001	5W5T1	MO.5-31	1FM-31	AF Plate Bypass
C	10000	300		484-01	GT4S1	ST-4-01	TC-11	AF Screen Bypass
D	1000	300		484-001	GT6D1	ST-6-001	TC-21	Audio Coupling
E	100	300		1468-0001	5W5T1	MO.5-31	1FM-31	Diode RF Filter
16	47	500	CM-470-1	1468-00005	5W5Q5	MO.5-45	1FM-45	Osc. Grid Cap.

*Parallel sections to obtain desired capacity.
‡Items #15A, B, C, D & E are combined into one unit obtainable under Manufacturers Part #CC-5-1.

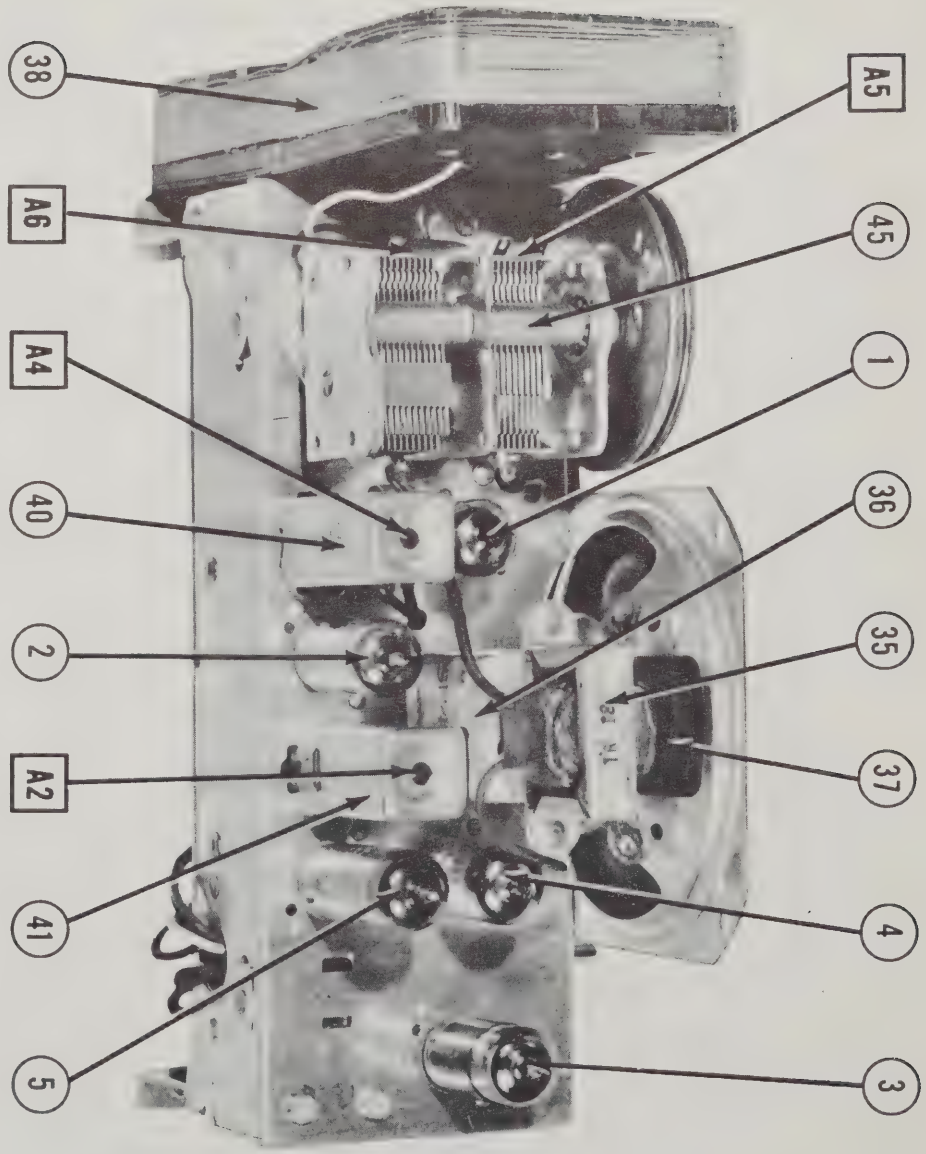
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELE-TONE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17A	1 Meg.	½	VC-16	D13-137	M-63-2	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 17A per instructions
C	Switch		" "	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELE-TONE PART No.	IRC PART No.	IDENTIFICATION CODES
18	100KΩ	½	RC-104-1	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
19	15KΩ	½	RC-153-1	BTS-15K	Br.-Grn.-Or. Converter Screen Dropping
20	10 Meg.	½	RC-106-1	BTS-10Meg.	Br.-Blk.-Blue IF Grid
21	2200Ω	½	RC-222-2	BTS-2200	Red-Red-Red Filament String
22	3.3 Meg.	½	RC-335-1	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
23	10 Meg.	½	RC-106-1	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
24	3.3 Meg.	½	RC-335-1	BTS-3.3 Meg.	Or.-Or.-Grn. AF Screen Dropping
25	1 Meg.	½	RC-105-1	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
26	2.2 Meg.	½	RC-225-1	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
27	680Ω	½	RC-681-2	BTS-680	Blue-Gray-Br. Bias
28	1500Ω	½	RC-152-2	BTS-1500	Br.-Grn.-Red Filament String
29	27Ω	½	RC-270-3	BW-½-27	Red-Vi.-Blk. " "
30	39Ω	½	RC-390-2	BW-½-39	Or.-White-Blk. " "
31	2550Ω	5	RP-5	AB-2500	Filament Dropping
32	6800Ω	1	RC-682-5	BTA-6800	Blue-Gray-Red Filter
33	18Ω	½	RC-180-1	BW-½-18	Br.-Gray-Blk. Rectifier Ballast
34	390Ω	½	RC-391-2	BW-½-390	Or.-White-Br. Filament String

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TELE-TONE PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
35	4200Ω	3.3Ω	355Ω	.4Ω	TR-10	A-3328		A-2098	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TELE-TONE PART No.	JENSEN PART No.	QUAM PART No.	
36	FIELD PM	VC IMP. 3.3Ω	SP-41-18	ST-113 Mod. P4-X	4A07	
37	CONE DIA. 4"	VC DIA. 9/16"				

R F COILS

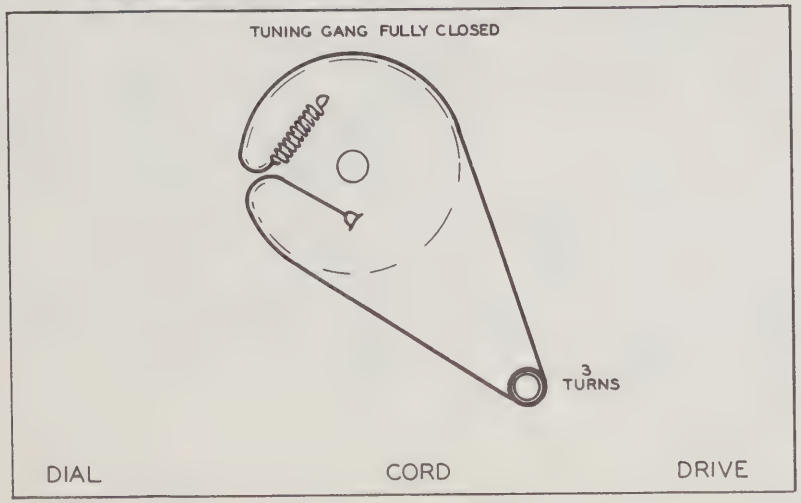
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	TELE-TONE PART No.	MEISSNER PART No.	
38	Loop Ant.		3.5Ω	LP-11		
39	Osc. Coil	1.5Ω	7Ω	LC-8		
40	Input IF	40Ω	36Ω	LF-22	16-6678	
41	Output IF	40Ω	36Ω	LF-22	16-6678	

BATTERIES

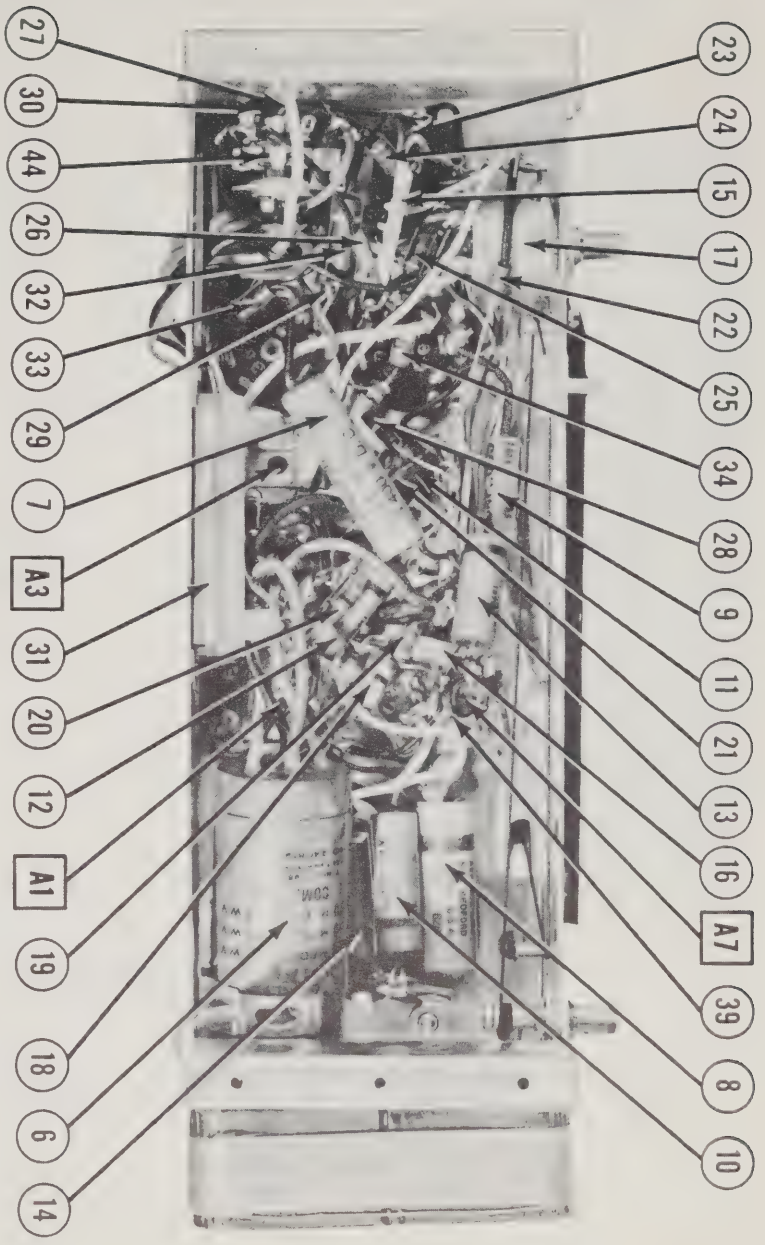
ITEM No.	VOLTAGE	TELE-TONE PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
42	4.5V "A"		746			G3			
43	67.5V"B"			467			XX45		

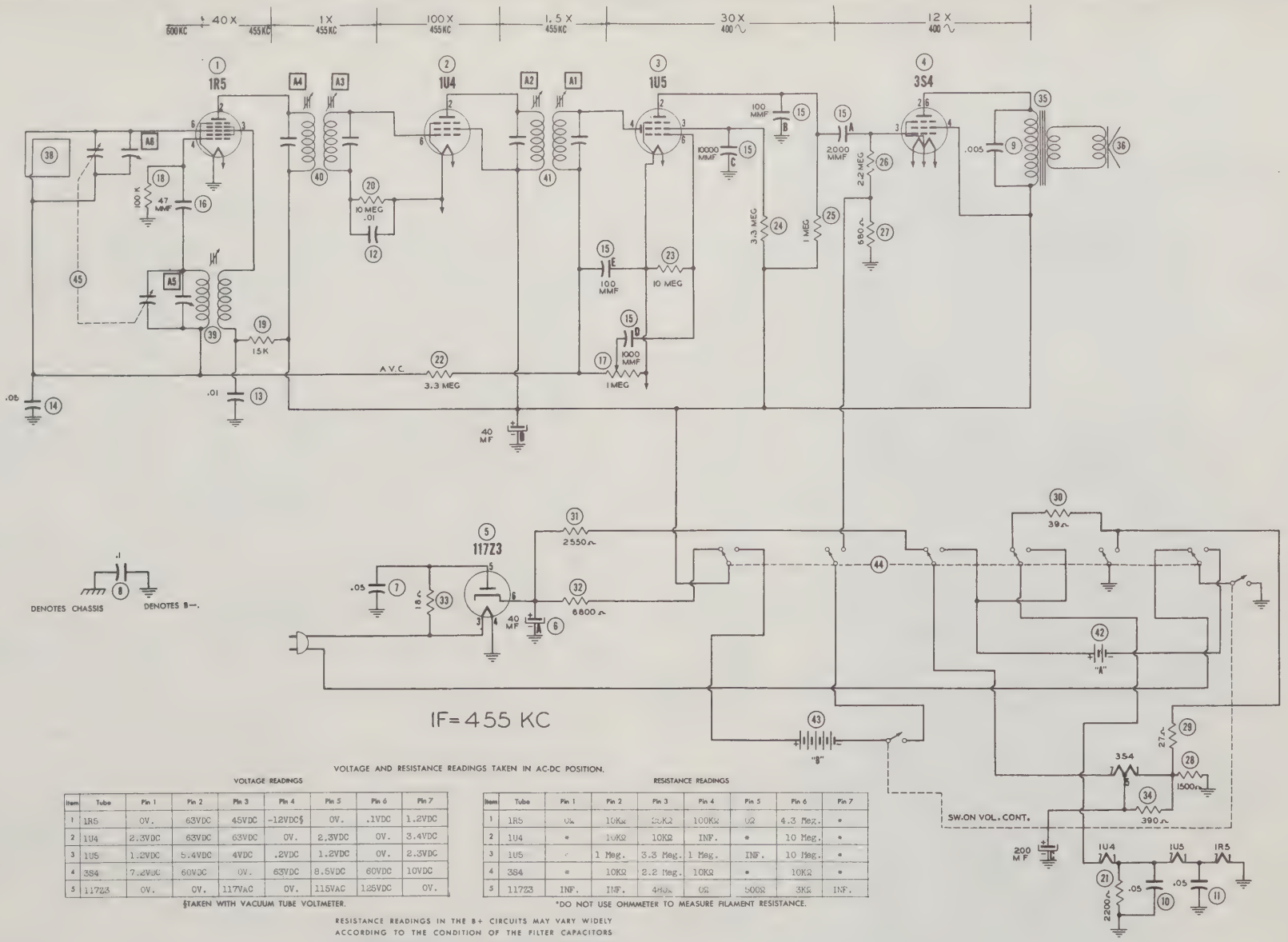
MISCELLANEOUS

ITEM No.	PART NAME	TELE-TONE PART No.	NOTES
44	Switch	SW-11	AC/DC-Battery
45	2 Gang Var. Cap	CV-15	(28-392MMF, 31-175MMF)



CHASSIS—BOTTOM VIEW





VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	0V.	63VDC	45VDC	-12VDC§	0V.	.1VDC	1.2VDC
2	1U4	2.3VDC	63VDC	63VDC	0V.	2.3VDC	0V.	3.4VDC
3	1U5	1.2VDC	5.4VDC	4VDC	.2VDC	1.2VDC	0V.	2.3VDC
4	3S4	7.2VDC	60VDC	0V.	63VDC	8.5VDC	60VDC	10VDC
5	11723	0V.	0V.	117VAC	0V.	115VAC	125VDC	0V.

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	0Ω	10KΩ	25KΩ	100KΩ	0Ω	4.3 Meg.	*
2	1U4	*	10KΩ	10KΩ	INF.	*	10 Meg.	*
3	1U5	*	1 Meg.	3.3 Meg.	1 Meg.	INF.	10 Meg.	*
4	3S4	*	10KΩ	2.2 Meg.	10KΩ	*	10KΩ	*
5	11723	INF.	INF.	440Ω	0Ω	500Ω	3KΩ	INF.

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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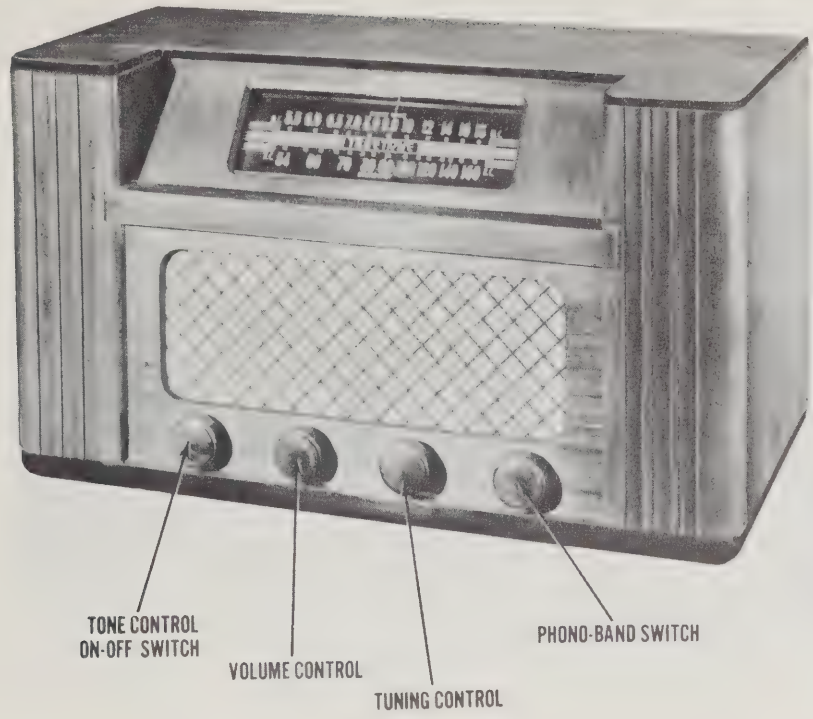
4822-21

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be born in mind that it is possible to introduce so many introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting AVC to B-.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volts.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

TRUETONE MODEL
D2626 (Fact. #457-2)



TRUETONE MODEL
D2626 (Fact. #457-2)

TRUETONE MODEL D2626

TRADE NAME	Truetone, Model D2626
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	AC Operated 2 Band Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 6SK7GT RF Amp., 6SA7GT Converter, 6SK7GT IF Amp., 6SQ7GT Det.-AVC-AF, 6V6GT Power Output, 6X5GT Rectifier.
POWER SUPPLY	110-125 Volts AC — RATING .39 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC — **SHORT WAVE** 6.0-18.0MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Standard RMA dummy consists of 200 MMFD cap. in series with a 20 micro henry choke with the choke shunted with a 400MMFD cap. in series with a 400Ω carbon resistor.

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 8 (grid) of 6SA7. Low side to chassis.	455KC	BC (Center position)	Tuning cap. fully closed	Across voice coil	A1,A2, A3,A4	Adjust for maximum output
2	.1 MFD	High side to Pin 4 of 6SK7 RF Tube (1). Low side to chassis.	"	"	"	"	A5	Adjust for minimum output
3		Loop	1500KC	"	1500KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4		"	"	"	Tune for maximum output.	"	A7	Adjust for maximum output
5		"	600KC	"	"	"	A8	Rock tuning cap. and adjust for maximum output. Repeat Steps 3, 4 & 5 until no further improvement can be made.
6	Standard RMA Dummy	High side to ant terminal "A". Low side to chassis.	18MC	SW (Fully clockwise)	18MC	"	A9	Adjust for maximum output. If two peaks can be obtained use one with A8 at minimum capacity.
7	"	"	16MC	"	Tune for maximum output.	"	A10	Rock tuning cap. and adjust for maximum output.

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DATE 12/48-#4822-22 SET #52-FOLDER #22

PARTS LIST AND DESCRIPTIONS

TRUETONE MODEL D2626

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7GT	6SK7GT	8N	
2	Converter	6SA7GT	6SA7GT	8AD	
3	IF Amp.	6SK7GT	6SK7GT	8N	
4	Det.-AVC-AF	6SQ7GT	6SQ7GT	7Q	
5	Power Output	6V6GT	6V6GT	7AC	
6	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	16	350	A20102	PRSA450/16-16	BZ3116	DH-2x16-450	TU-1616	Filter-Blue
B	16	350						" -Red
C	20	350		PRS450/20	BR2045	M-20-350	UT-203	" -Green
8	25	25	20105	PRS25/25	BR252A	M-25-25	TA-25	Cathode Bypass
9	.05	600	1975	689-05	TVC-6S5	XTT-6-05	PX-156	Line Filter
10	.05	600	1975	689-05	TVC-6S5	XTT-6-05	PX-156	" "
11	.01	600		684-01	GT6S1	STM-10-01	TR-11	Output Plate Bypass
12	.01	600		684-01	GT6S1	ST-6-01	TC-11	Audio Coupling
13	.002	600		684-002	GT6D2	ST-6-002	TC-22	" "
14	.005	600		684-005	GT6D5	ST-6-005	TC-25	Tone Compensation
15	.02	600		684-02	GT6S2	ST-6-02	TC-12	RF Byp. Pwr. Supply-See Note
16	.2	600		684-.2	GT6P2	ST-6-2	TC-2	Decoupling
17	.1	400		484-.1	GT4P1	ST-4-1	TC-1	Screen Decoupling
18	.05	400		484-.05	GT4S5	ST-4-05	TC-15	AVC Filter
19	250	500		1468-00025	5W5T25	MO.5-325	1FM-325	AF Plate Bypass
20	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	Diode RF Filter
21	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	" " "
22	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	Osc. Grid Cap.
23	5020	500						Fixed Padder
24	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	RF Coupling
25	82	500						Fixed Trimmer

Note-Not used in all models.

CONTROLS

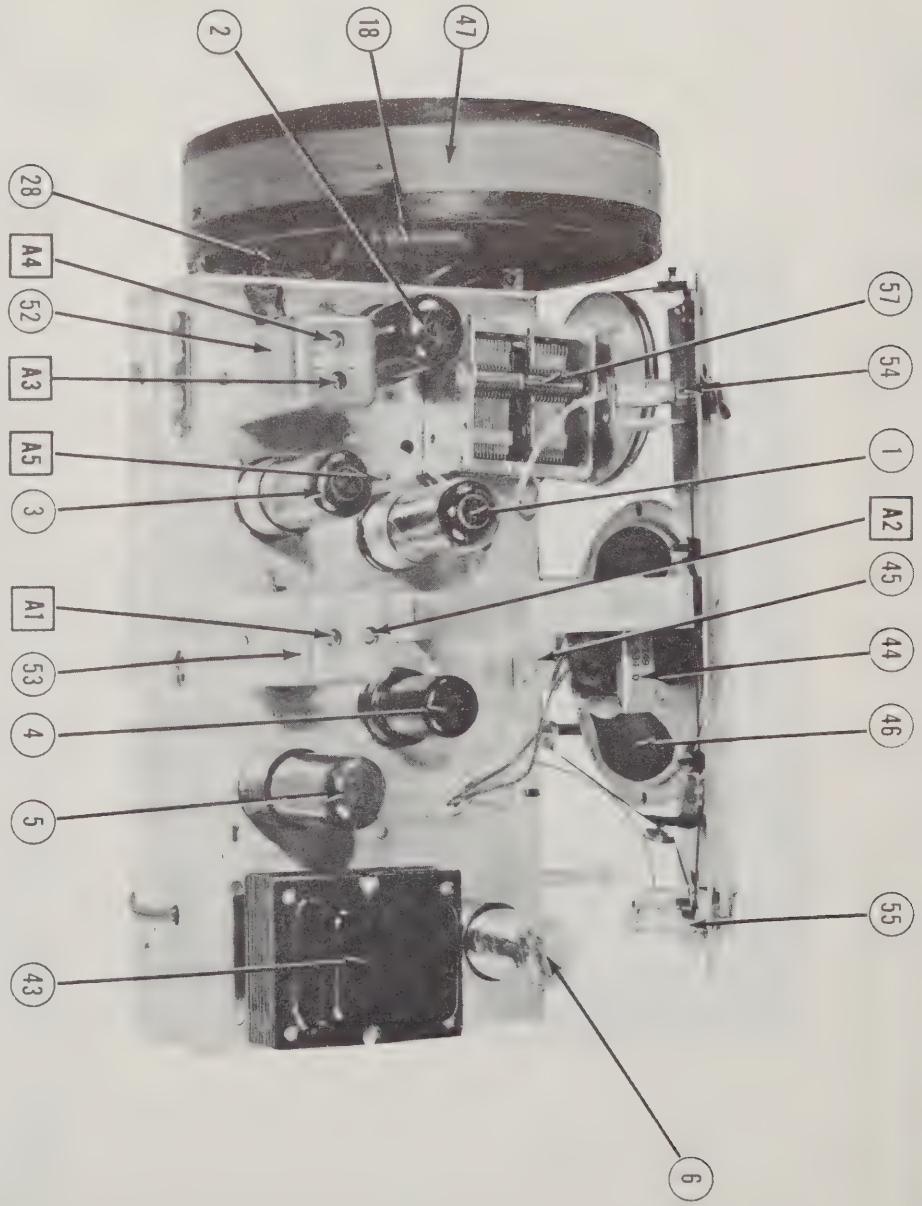
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
26A	500KΩ	½	2470-A	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to 26A per instructions
27A	250KΩ	½	2521	D11-130	M-55-S	Tone Control
B	Shaft		Not Req.	A	Not Req.	Attach to 27A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	IDENTIFICATION CODES
28	1000Ω	½		BTS-1000	Br.-Blk.-Red Antenna Loading
29	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Converter Grid
30	7500Ω	2		BT-2-6800	Vi.-Grn.-Red RF Plate Load
31	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
32	150Ω	½		BW-½-150	Br.-Grn.-Br. Parasitic Suppressor
33	6000Ω	2		BT-2-6800	Blue-Blk.-Red Screen Dropping
34	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
35	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Diode RF Filter
36	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AF Grid
37	220KΩ	½		BTS-220K	Red-Red-Yl. AF Plate Load
38	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
39	300Ω	1		BW-1-330	Or.-Blk.-Br. Output Cathode
40	1500Ω	2		BT-2-1500	Br.-Grn.-Red Filter
41	400Ω	2		BW-2-390	Yl.-Blk.-Br. "
42	470Ω	½		BTS-470	Yl.-Vi.-Br. Decoupling-See Note

Note-Not used in all models.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	TRUETONE PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
43	117V AC @ .39A	500V CT .063A DC	6.7V AC @ 2.6A		1020	P-6119‡*	T22R02‡*	P-3048‡

‡Drill new mounting holes.
*Add series resistor to reduce plate voltage.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TRUETONE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
44	3700Ω	3.1Ω	230Ω	.6Ω	1333	A-3877#	T22S46#	A-2930#	#Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TRUETONE PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	VC IMP.		ST-105†		
45	PM	3.1Ω	5866	Mod. P5-X	5A15†	†Drill and tap magnet frame.
	CONE DIA.	VC DIA.				
46	4-5/8"	9/16"				

R F COILS

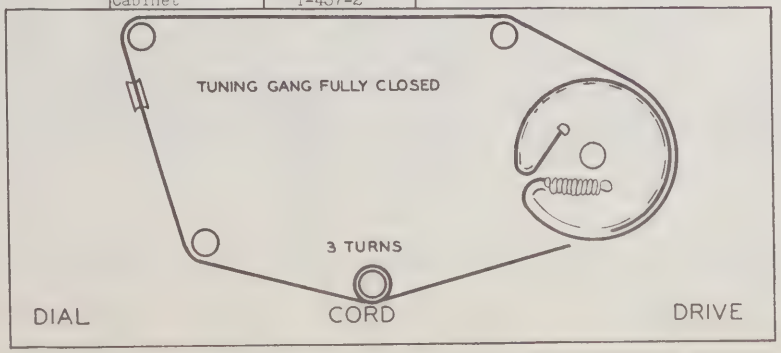
ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.
47	Loop Ant.	.2Ω	1Ω	28170	
48	Ant. Coil SW	.1Ω	0Ω	28167	14-1064
49	Wave Trap		10Ω	28175	
50	Osc. Coil BC		3Ω	28169	14-1060
51	" " SW		0Ω	28168	14-1066
52	Input IF	19.8Ω	19.8Ω	3360	16-5740
53	Output IF	16.2Ω	16.7Ω	3530	16-5742

DIAL LIGHT

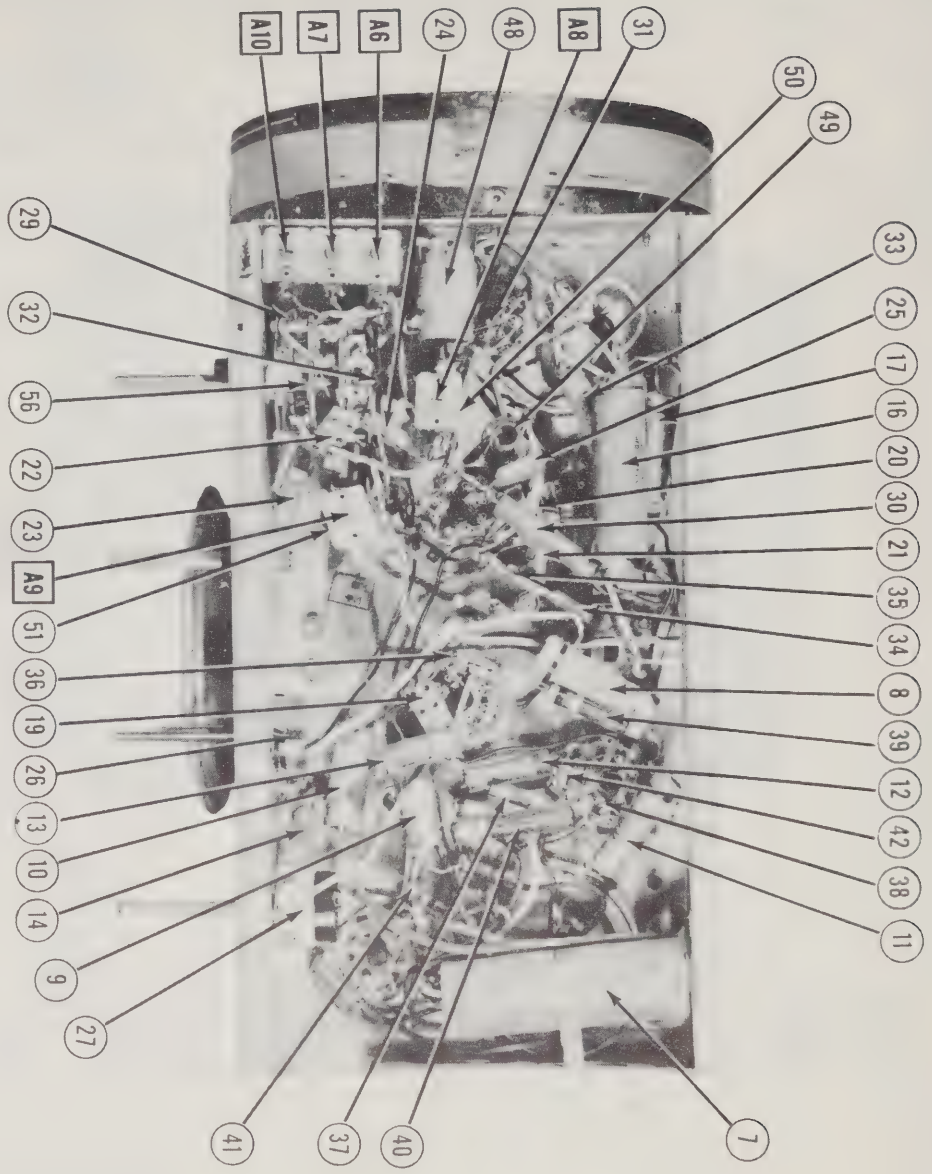
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					TRUETONE PART No.		
54	Bayonet	6-8	0.15	Brown			Type 47
55	"	"	"	"			" "

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
56	Switch	1668	Band-Phono (15-174MMF, 15-466MMF)
57	2 Gang Var. Cap. Cabinet	T-457-2	



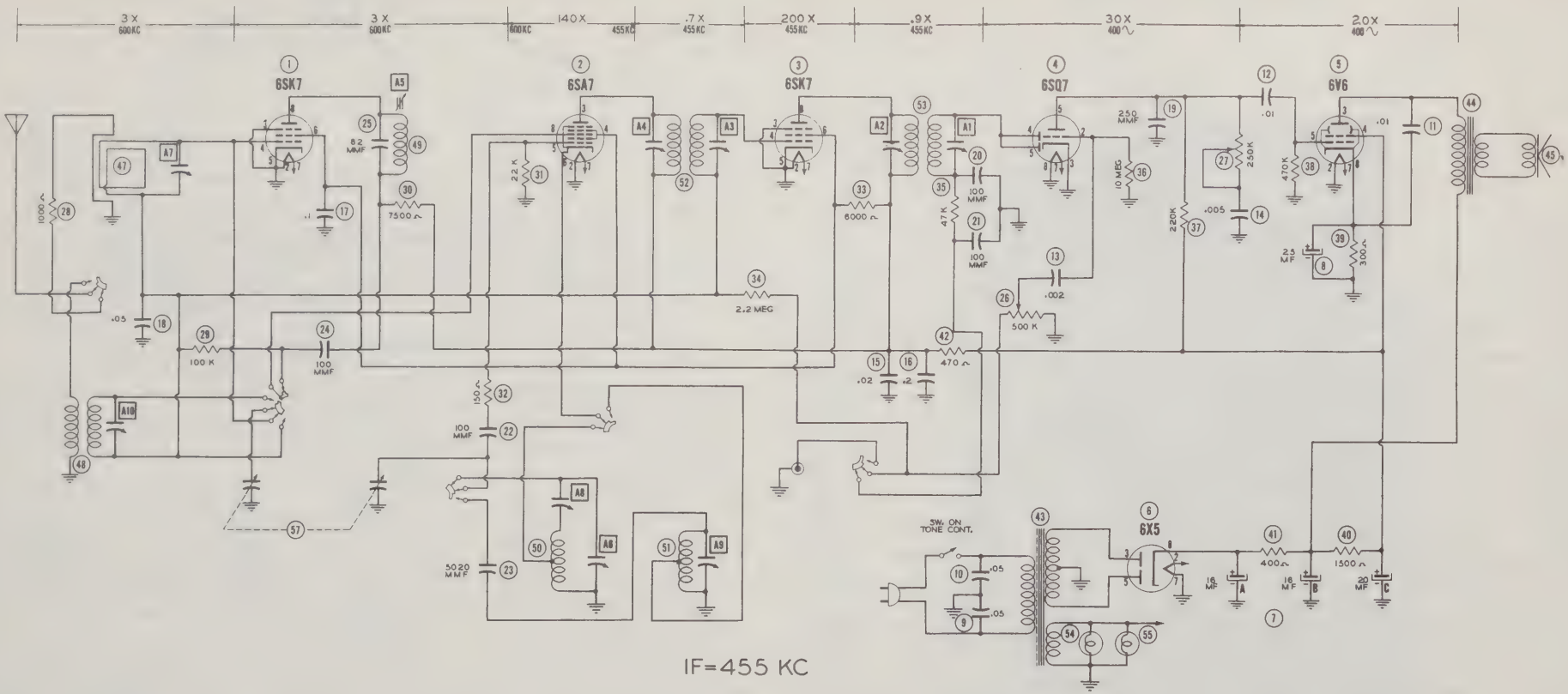
CHASSIS—BOTTOM VIEW



TRUETONE MODEL D2626

DATE 12/48-#4822-22 SET #52-FOLDER #22

TRUETONE MODEL D2626



VOLTAGE READINGS

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0V.	6.7VAC	0V.	-.6VDC	0V.	85VDC	0V.	85VDC
2	6SA7GT	0V.	0V.	165VDC	85VDC	-7VDC§	0V.	6.7VAC	-.4VDC
3	6SK7GT	0V.	0V.	0V.-	-.6VDC	0V.	85VDC	6.7VAC	165VDC
4	6SQ7GT	0V.	-.7VDC	0V.	-.6VDC	-.6VDC	90VDC	6.7VAC	0V.
5	6V6GT	0V.	0V.	230VDC	180VDC	0V.	165VDC	6.7VAC	9VDC
6	6X5GT	0V.	0V.	250VAC	0V.	250VAC	0V.	6.7VAC	260VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0Ω	.1Ω	0Ω	2.7 Meg.	0Ω	85KΩ	0Ω	85KΩ
2	6SA7GT	0Ω	0Ω	80KΩ	85KΩ	22KΩ	1Ω	.1Ω	2.7 Meg.
3	6SK7GT	0Ω	0Ω	0Ω	2.7 Meg.	0Ω	85KΩ	.1Ω	80KΩ
4	6SQ7GT	0Ω	10 Meg.	0Ω	550KΩ	550KΩ	300KΩ	.1Ω	0Ω
5	6V6GT	0Ω	0Ω	80KΩ	80KΩ	470KΩ	80KΩ	.1Ω	300Ω
6	6X5GT	0Ω	0Ω	185Ω	INF.	175Ω	INF.	.1Ω	70KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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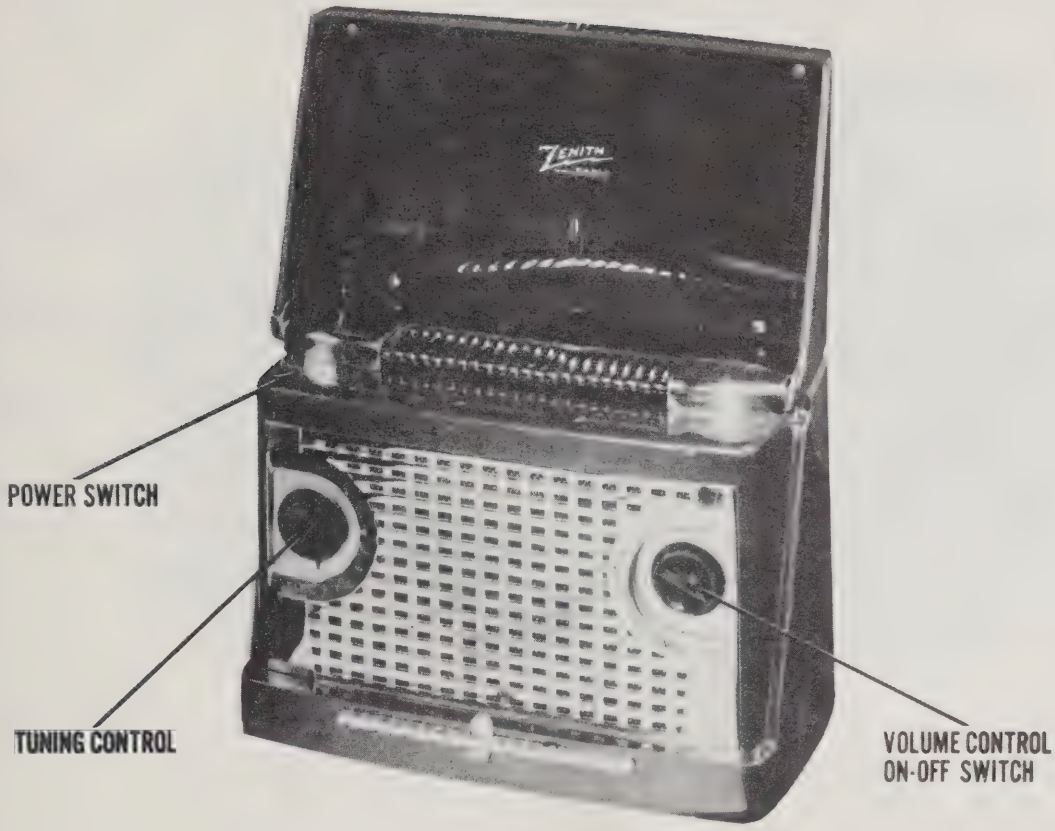
4822-22

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

ZENITH MODELS 4G800Z, 4G800WZ, 4G800YZ (Ch. 4E41Z) BATTERY-LINE OPERATED

ZENITH MODELS 4G800Z, 4G800WZ, 4G800YZ (Ch. 4E41Z) BATTERY-LINE OPERATED



ZENITH MODEL 4G800Z

TRADE NAME	Zenith, Models 4G800Z, 4G800WZ, 4G800YZ (Ch. 4E41Z)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Ill.
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types, 1R5 Converter, 1U4 IF Amp., 1S5 Det.-AVC-AF, 3V4 Power Output
POWER SUPPLY RATING	110-120 Volts AC-DC or 1.5 Volts "A" Supply and 67.5 Volts "B" Supply .13 Amp. @ 117 Volts AC or 230 MA @ 1.5 Volts DC and 9 MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with low side of the signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 6 (grid) of 1R5. Low side to B-.	455KC	Tuning cap. fully closed.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200 MMF to reduce hum modulation. Install receiver in cabinet with loop connected.
2		Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.

HOWARD W. SAMS & CO., INC. **Indianapolis Indiana**

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PARTS LIST AND DESCRIPTIONS

ZENITH MODEL 4G800Z

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		ZENITH PART No.	STANDARD REPLACEMENT		
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1U4	1U4	6AR	
3	2nd Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	
5A	40	150	22-1443		UP7DJ63		D5152	Filter
B	20	150						"
C	40	150						"
D	200	10						Filament Bypass
6	.047	400	22-1775	484-05	GT4S5	ST-4-05	TC-15	Line Filter
7	.05	200	22-1655	484-05	GT2S5	ST-4-05	72P1	Line Isolation
8	.003	400	22-326	484-003	GT6D3	ST-6-003	TC-23	Output Plate Bypass
9	.005	600	22-1175	684-005	GT6D5	ST-6-005	TC-25	Audio Coupling-Note 1
10	.05	200	22-1655	484-05	GT2S5	ST-4-05	TC-15	Filament Bypass
11	.05	200	22-1655	484-05	GT2S5	ST-4-05	TC-15	Decoupling
12	100	500	22-1669	1468-0001	5W5T1	MO.5-31	1FM-31	AF Plate Bypass-Note 1
13	5000	500		1467-005	1D5D5	MW.5-25	1FM-25	AF Screen Byp. - " "
14	1000	500		1468-001	1W5D1	MW.5-21	1FM-21	Audio Coupling - " "
15	100	500	22-1669	1468-0001	5W5T1	MO.5-31	1FM-31	Diode RF Filter-Note 2
16	100	500	22-1669	1468-0001	5W5T1	MO.5-31	1FM-31'	" " " " "
17	5000	500		1467-005	1D5D5	MW.5-25	1FM-25	IF Plate Decoupling
18	5000	500		1467-005	1D5D5	MW.5-25	1FM-25	AVC Filter
19	5000	500		1467-005	1D5D5	MW.5-25	1FM-25	Osc. Decoupling
20	5000	500		1467-005	1D5D5	MW.5-25	1FM-25	AVC Filter

Note 1-In some models, Items 9,12,13 & 14 may be combined into one unit obtainable under manufacturers Part #105-3.

Note 2-In some models, Items 15,16 and 30 may be combined into one unit obtainable under manufacturers Part #105-2.

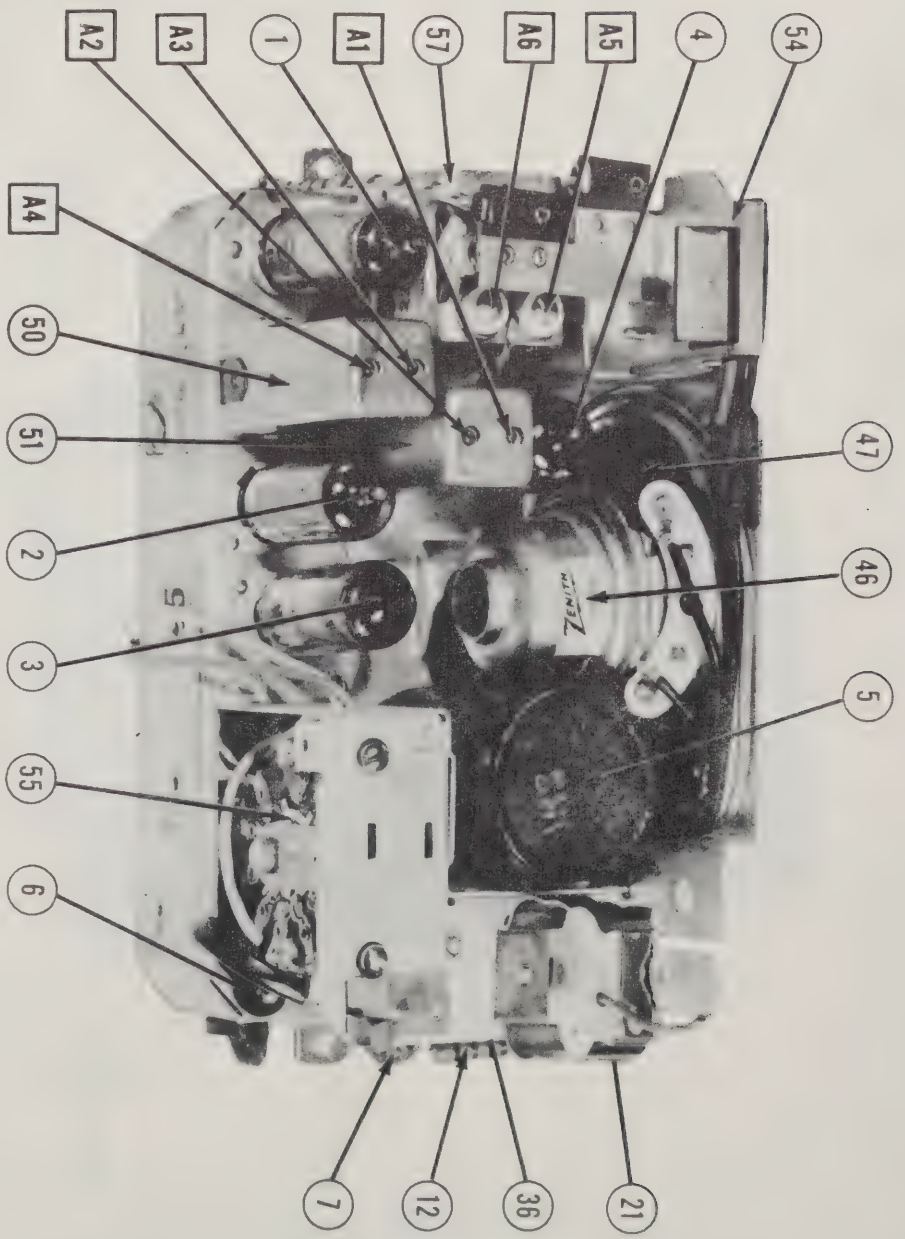
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	
21	1 Meg.	½	63-1651		15/16-63-Z	Volume Control

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ZENITH PART No.	IRC PART No.	
22	100KΩ	½	63-1870	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
23	2200Ω	½	63-1800	BTS-2200	Red-Red-Red Parasitic Suppressor
24	12KΩ	½	63-1831	BTS-12K	Br.-Red-Or. Osc. Decoupling
25	10 Meg.	½	63-1954	BTS-10 Meg.	Br.-Blk.-Blue AVC Network
26	330KΩ	½	63-1891	BTS-330K	Or.-Or.-Yl. Line Isolation
27	4.7 Meg.	½	63-1940	BTS-4.7 Meg.	Yl.-Vi.-Grn. AVC Network
28	1 Meg.	½	63-1912	BTS-1 Meg.	Br.-Blk.-Grn. IF Transformer Shunt
29	1000Ω	½	63-1786	BTS-1000	Br.-Blk.-Red IF Plate Decoupling
30	47KΩ	½	63-1856	BTS-47K	Yl.-Vi.-Or. Diode RF Filter-See Note 2
31	15 Meg.	½	63-1961	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
32	4.7 Meg.	½	63-1940	BTS-4.7 Meg.	Yl.-Vi.-Grn. " "
33	15 Meg.	½	63-1961	BTS-15 Meg.	Br.-Grn.-Blue AF Grid
34	4.7 Meg.	½	63-1940	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Screen Dropping
35	1 Meg.	½	63-1912	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
36	220Ω	½	63-1758	BW-½-220	Red-Red-Br. Filament String
37	220Ω	½	63-1758	BW-½-220	Red-Red-Br. Filament String
38	470Ω	½	63-1771	BTS-470	Yl.-Vi.-Br. " "
39	300Ω	½	63-1762		Or.-Blk.-Br. " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ZENITH PART No.	IRC PART No.	
40	3.3 Meg.	½	63-1933	BTS-3.3 Meg.	Or.-Or.-Grn. Output Grid
41	8200Ω	½	63-1824	BTS-8200	Gray-Red-Red Decoupling
42A	1050Ω	10	63-1647	AB-1000	Filament Dropping
B	1050Ω	10		AB-1000	" "
43	1200Ω	½	63-1789	BTS-1200	Br.-Red-Red Filter
44	91Ω	2	63-1655		Surge Limiter-See Note 3

Note 2-In some models, Items 15, 16 and 30 may be combined into one unit obtainable under manufacturers Part #105-2.
Note 3-Special fuse type resistor. Order from manufacturer.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
45	10800Ω	3.4Ω	620Ω	.5Ω	95-1014			A-2999	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	ZENITH PART No.	JENSEN PART No.	QUAM PART No.	
46A	PM	3.4Ω	49-646		3A07	
B	PM	3.8Ω	49-587		3A07	
	CONE DIA.	VC DIA.				
47A	3-3/8"	9/16"				
B	3-3/8"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	
48	Loop Ant.		1.8Ω	S-13786		
49	Osc. Coil	3Ω	8.5Ω	S-13774		
50	Input IF	15Ω	15Ω	95-1015	16-6668	
51	Output IF	15Ω	15Ω	95-1016	16-6669	

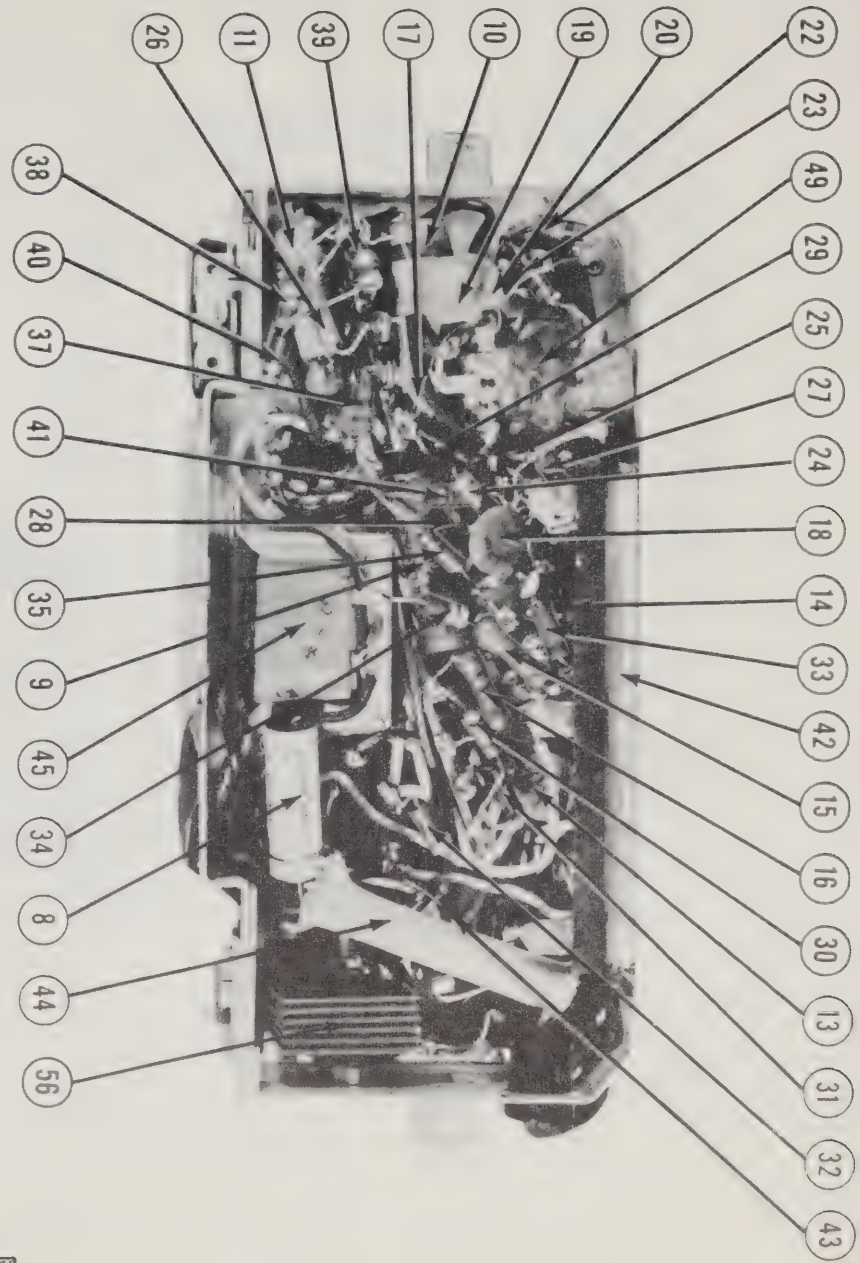
BATTERIES

ITEM No.	VOLTAGE	ZENITH PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
52A	1.5V "A"	Z4NL	950			2R			2 Used in Parallel
B	1.5V "A"	Z3NL							
53	67.5V"B"	Z45			467		XX45		

MISCELLANEOUS

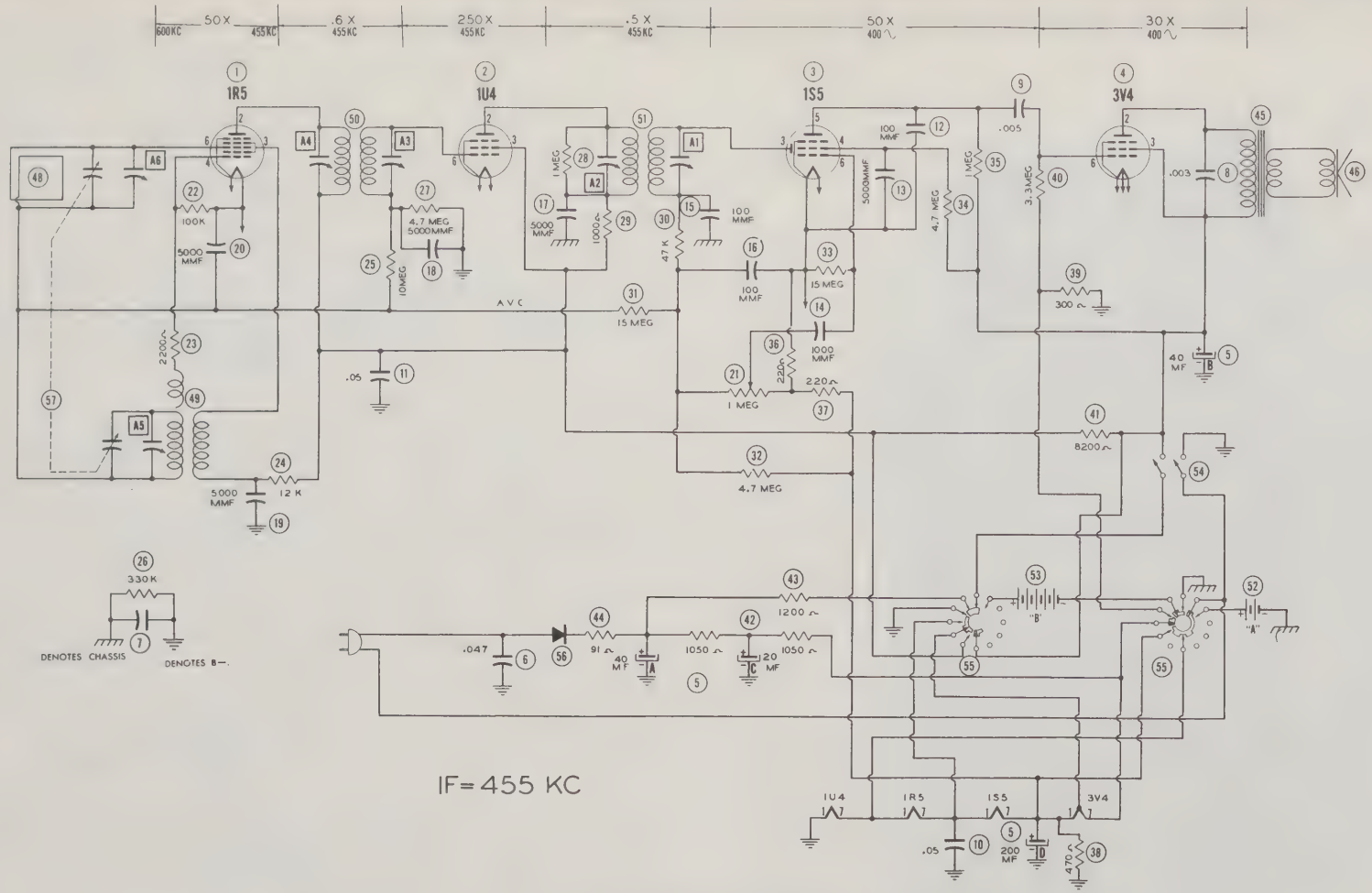
ITEM No.	PART NAME	ZENITH PART No.	NOTES
54	Switch	85-433	On-Off
55	"	85-400	AC/DC-Batt.
56	Rectifier	212-2	Selenium
57	2 Gang Var. Cap.	22-1457	(17-343MMF, 14-108MMF)
	Dial Pointer	59-200	

CHASSIS—BOTTOM VIEW



ZENITH MODEL 4G800Z

ZENITH MODEL 4G800Z



VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	1.6VDC	66VDC	43VDC	-3VDC§	1.6VDC	0V.	3.1VDC
2	1U4	0V.	65VDC	66VDC	66VDC	0V.	-.1VDC	1.6VDC
3	1S5	3.1VDC	4VDC	.8VDC	25VDC	15VDC	0V.	4.4VDC
4	3V4	4.4VDC	95VDC	98VDC	98VDC	6.2VDC	0V.	7.6VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	*	11KΩ	22KΩ	100KΩ	*	10 Meg.	*
2	1U4	0Ω	12KΩ	11KΩ	11KΩ	0Ω	3.5 Meg.	*
3	1S5	*	700KΩ	1 Meg.	4.7 Meg.	1 Meg.	.15 Meg.	*
4	3V4	*	3KΩ	3KΩ	3KΩ	*	3.3 Meg.	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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4822-23

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting across volume control.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volts.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

ZENITH MODELS 8H832,
8H861 (Ch. 8E20)

ZENITH MODELS 8H832,
8H861 (Ch. 8E20)

ZENITH MODEL 8H832

TRADE NAME	Zenith, Models 8H832, 8H861 (Ch. 8E20)	
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Ill.	
TYPE SET	AC Operated AM-2 Band FM Superheterodyne Receiver with Loop Antenna	
TUBES (EIGHT)	Types, 6BA6 RF Amp., 6BE6 Converter, 6BA6 1st IF Amp., 6AU6 2nd IF Amp., 6AU6 Limiter, 6T8 Det.-AVC-AF, 6V6GT Power Output, 5Y3GT Rectifier.	
POWER SUPPLY	110-120 Volts AC	RATING .75 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1620KC	FM 45- 42-48.5MC, FM100- 88-108MC

HOWARD W. SAMS & CO., INC. **Indianapolis Indiana**

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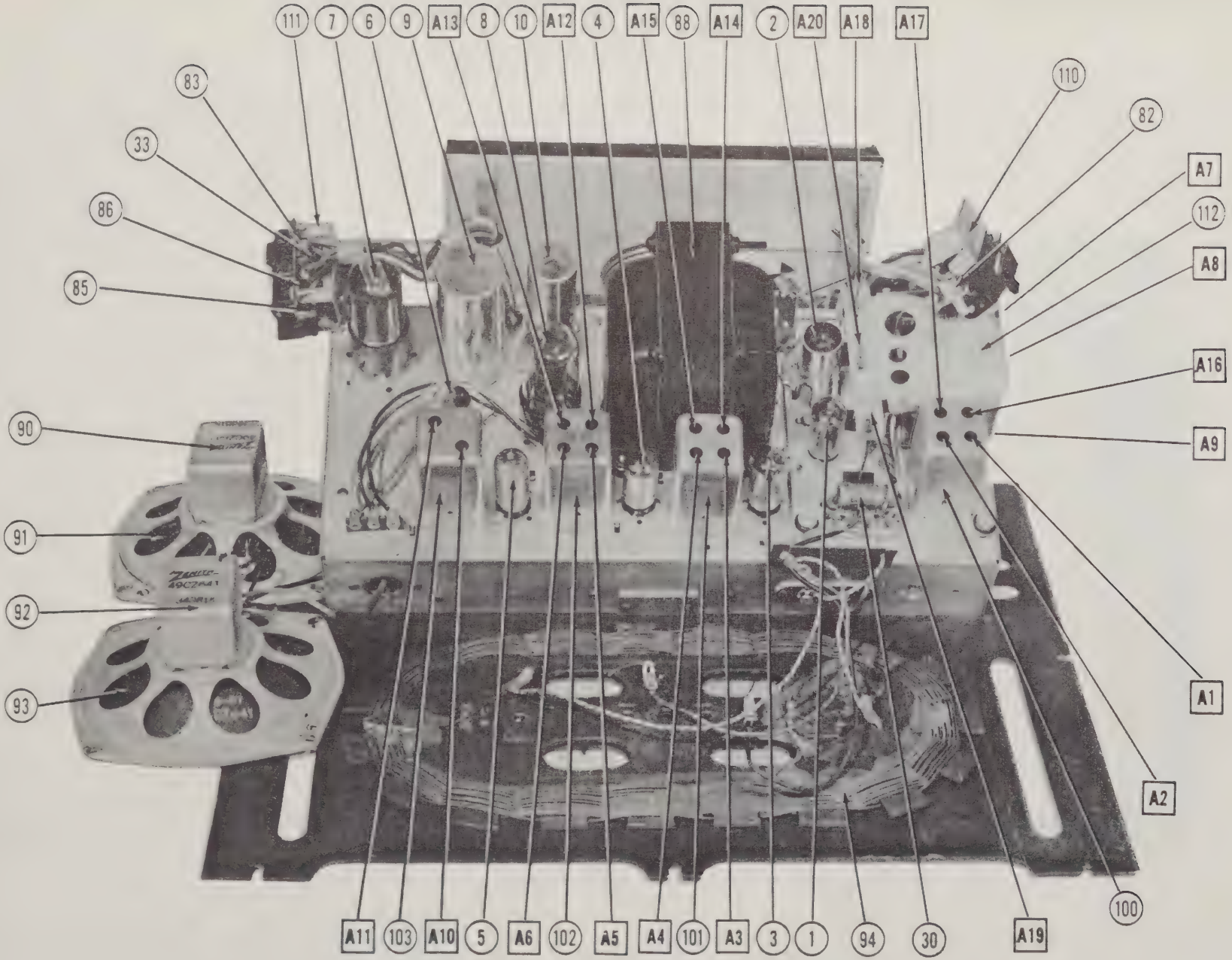
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6BA6	6BA6	7BK	
2	Converter	6BE6	6BE6	7CH	
3	1st IF Amp.	6BA6	6BA6	7BK	
4	2nd IF Amp.	6AU6	6AU6	7BK	
5	Limiter	6AU6	6AU6	7BK	
6	Det.-AVC-AF	6T8	6T8		
7	Power Output	6V6GT	6V6GT	7AC	
8	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	40	450	22-1720		UP4445C	DY-314	D5172	◓ Filter
B	40	450						■ "
C	40	25						▲ Output Cathode Bypass
10	40	450	22-1573	AF8J	UP4045	DY-40-450	EL-4	Decoupling
11	.0022	600	22-1754	684-002	GT6D2	ST-6-002	TC-22	Tone Compensation
12	.05	600	22-171	684-05	GT6S5	ST-6-05	TC-15	Audio Coupling
13	.05	600	22-171	684-05	GT6S5	ST-6-05	TC-15	AF Plate Decoupling
14	.01	400	22-1718	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling
15	.001	200	22-1717	484-001	GT6D1	ST-6-001	TC-21	Tone Compensation
16	.01	600	22-196	684-01	GT6S1	ST-6-01	TC-11	RF Bypass Pwr. Supply
17	.2	200	22-1531	484-.2	CT4P2	ST-4-2	TC-2	Tone Compensation
18	.02	600	22-830	684-02	GT6S2	ST-6-02	TC-12	Audio Coupling
19	.005	400	22-1041	464-005	GT6D5	ST-6-005	TC-25	Line Filter
20	.002	600	22-1220	684-002	GT6D2	ST-6-002	TC-22	Lim. Plate Decoup.
21	.01	200	22-1385	484-01	GT2S1	ST-4-01	TC-11	Lim. Screen Byp.
22	.002	600	22-1220	684-002	GT6D2	ST-6-002	TC-22	2nd IF Plate Decoup.
23	.01	200	22-1385	484-01	GT2S1	ST-4-01	TC-11	2nd IF Screen Byp.
24	.05	400	22-829	484-05	GT4S5	ST-4-05	TC-15	2nd IF Cathode Byp.
25	.01	200	22-1385	484-01	GT2S1	ST-4-01	TC-11	Filament Bypass
26	.05	400	22-829	484-05	GT4S5	ST-4-05	TC-15	1st IF Cathode Bypass
27	.01	200	22-1385	484-01	GT2S1	ST-4-01	TC-11	1st IF Screen Bypass
28	.002	600	22-1220	684-002	GT6D2	ST-6-002	TC-22	1st IF Plate Decoupling
29	.05	200	22-829	484-05	GT2S5	ST-4-05	TC-15	AVC Filter
30	.05	200	22-829	484-05	GT2S5	ST-4-05	TC-15	" "
31	100	500	22-365	1468-0001	5W5T1	MO.5-31	1FM-31	AF Plate Bypass-Cer.
32	75	500	22-1256	1468-000075	5W5Q7	MOS.5-47	1FM-475	Tone Compensation
33	250	500	22-1136	1468-00025	5W5T25	MO.5-325	1FM-325	" "
34	100	500	22-1669	1469-0001	5R5T1	MOS.5-31	MS-31	Diode RF Filter-Cer.
35	55	500	22-1691					Fixed Pad "
36	1000	300	22-348	1468-001	1W5D1	MW.5-21	1FM-21	AVC Filter
37	5000	450	22-1706	1467-005	1D5D5	MW.5-25	1FM-25	Conv. Plate Decoup.-Cer.
38	5000	450	22-1706	1467-005	1D5D5	MW.5-25	1FM-25	Conv. Screen Byp.-Cer.
39	50	500	22-1367	1469-00005	5R5Q5	MOS.5-45	MS-45	Osc. Grid Cap. "
40	100	500	22-1669	1468-0001	5W5T1	MO.5-31	1FM-31	RF Plate Decoup. "
41	100	500	22-1669	1468-0001	5W5T1	MO.5-31	1FM-31	" " " "
42	30	500	22-1705	1468-000025	5W5Q3	MO.5-43		RF Cathode Byp. "
43	1000	500	22-1676	1468-001	1W5D1	MW.5-21		RF Screen Bypass "
44	19	500	22-1688					Fixed Trimmer "
45	22	500	22-1506					" " "
46	46	500	22-1689					" " "
47	25	500	22-1507	1468-000025	5W5Q25	MO.5-45	1FM-45	Lim. Grid Filter "
113	100	300	22-1669	1468-0001	5W5T1	MO.5-31	1FM-31	FM Line Ant. Coup. "

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
48A	1 Meg.	½	63-1588	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to 48A per instructions
C	Switch		" "	41	SW-A	" " " " "

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: ZENITH PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
90	FIELD / PM	VC IMP. 3.2Ω	49-641	ST-107† Mod. P5-V	52A21	†Use adaptor baffle
91	CONE DIA. 5-1/8"	VC DIA. 9/16"				
92	FIELD / PM	VC IMP. 3.2Ω	49-641	ST-107† Mod. P5-V	52A21	
93	CONE DIA. 5-1/8"	VC DIA. 9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: MEISSNER PART No.	
94	Loop Ant.	.1Ω	1Ω	S-14647		
95	Ant.Coil FM	0Ω	0Ω	S-14192		Items 95, 97 and 99 are slug tuned and ganged together.
96	RF Coil BC	2.5Ω	10Ω	S-13974	14-1057	
97	" " FM	0Ω	0Ω	S-13871		
98	Osc.Coil BC		9.8Ω	S-11157	14-1060	
99	" " FM		0Ω	S-12259		
100A	1st IF AM	7.2Ω*	8Ω§	S-13970		*Includes resistance of both primaries.
B	" " FM					§Includes resistance of both secondaries.
101A	2nd IF AM	8.2Ω*	2.2Ω§	S-13971		
B	" " FM					
102A	3rd IF AM	8.5Ω*	7.5Ω	S-13972		
B	" " FM		.8Ω			
103	FM Det.Tran.	.4Ω	.4Ω	S-13973		
104	Tone Choke		2Ω	S-13800		
105	RF Plate Chk.		.2Ω	S-14126		
106	Line Choke		.1Ω	S-12256		
107	" "		.1Ω	S-12256		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
108	Bayonet	6-8	0.25	Blue	100-36		Type #44

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
109	Switch	85-424	Band
110	"	S-14261	Radiorgan LH
111	"	S-14260	" RH
112	3 Gang Var. Cap.	22-1678	(13-516MMF, 15-213MMF, 15-88MMF)
A21	Trimmer	22-1686	FM Osc. Adj.
A22	"	22-1685	FM RF Adj.
A23	"	22-1685	FM Ant. Adj.
	Dial Glass	192-115	
	Dial Scale	26-396	
	Dial Pointer	59-209	

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ZENITH PART No.	IRC PART No.	
49	1 Meg.	½	63-1912	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
50	68Ω	½	63-1737		Blue-Gray-Blk. RF Cathode
51	33KΩ	1	63-957	BTA-33K	Or.-Or.-Or. RF Screen
52	470Ω	½	63-1771	BTS-470	Yl.-Vi.-Br. RF Plate Decoupling
53	22KΩ	2	63-1566	BT-2-22K	Red-Red-Or. Conv. Screen
54	22KΩ	½	63-1842	BTS-22K	Red-Red-Or. Osc. Grid
55	470Ω	½	63-1772	BTS-470	Yl.-Vi.-Br. Parasitic Suppressor
56	220KΩ	½	63-1884	BTS-220K	Red-Red-Yl. AVC Network
57	2.2 Meg.	½	63-1926	BTS-2.2 Meg.	Red-Red-Grn. " "
58	2200Ω	½	63-1880	BTS-2200	Red-Red-Red Conv. Plate Decoupling
59	68Ω	½	63-1737		Blue-Gray-Blk. 1st IF Cathode
60	33KΩ	1	63-957	BTA-33K	Or.-Or.-Or. 1st IF Screen
61	2200Ω	½	63-1800	BTS-2200	Red-Red-Red 1st IF Plate Decoupling
62	68Ω	½	63-1737		Blue-Gray-Blk. 2nd IF Cathode
63	22KΩ	½	63-1841	BTS-22K	Red-Red-Or. 2nd IF Screen
64	2200Ω	½	63-1800	BTS-2200	Red-Red-Red 2nd IF Plate Decoupling
65	47KΩ	½	63-1856	BTS-47K	Yl.-Vi.-Or. Diode Filter
66	220KΩ	½	63-1884	BTS-220K	Red-Red-Yl. Diode Load
67	100KΩ	½	63-1870	BTS-100K	Br.-Blk.-Yl. Limiter Grid
68	8200Ω	½	63-1824	BTS-8200	Gray-Red-Red Limiter Plate Decoupling
69	3900Ω	½	63-1810	BTS-3900	Or.-White-Red Limiter Plate Bleeder
70	22KΩ	2	63-1566	BT-2-22K	Red-Red-Or. Limiter Decoupling
71	150KΩ	½	63-1876	BTS-150K	Br.-Grn.-Yl. Disc. Diode Load
72	150KΩ	½	63-1876	BTS-150K	Br.-Grn.-Yl. " " "
73	33KΩ	½	63-1848	BTS-33K	Or.-Or.-Or. De-emphasis Network
74	100KΩ	½	63-1869	BTS-100K	Br.-Blk.-Yl. " "
75	15 Meg.	½	63-1961	BTS-15 Meg.	Br.-Grn.-Grn. AF Grid
76	220KΩ	½	63-1883	BTS-220K	Red-Red-Yl. AF Plate Load
77	100KΩ	½	63-1870	BTS-100K	Br.-Blk.-Yl. AF Plate Decoup.
78	470KΩ	½	63-1897	BTS-470K	Yl.-Vi.-Yl. Output Grid
79	270Ω	1	63-1369	BW-1-270	Red-Vi.-Br. Output Cathode
80	3900Ω	½	63-1810	BTS-3900	Or.-White-Red Tone Compensation
81	390Ω	½	63-1768	BW-½-390	Or.-White-Br. " "
82	4700Ω	½	63-1813	BTS-4700	Yl.-Vi.-Red " "
83	680Ω	½	63-1778	BTS-680	Blue-Gray-Br. " "
84	33Ω	½	63-1722	BW-½-33	Or.-Or.-Blk. " "
85	33Ω	½	63-1722	BW-½-33	Or.-Or.-Blk. " "
86	1.5 Meg.	½	63-1918	BTS-1.5 Meg.	Br.-Grn.-Grn. " "
87A	1000Ω	½	63-1589	AB-1000	Filter
B	200Ω	½		AB-200	"
114	22KΩ	½	63-1841	BTS-22K	Red-Red-Or. FM RF Coil Shunt

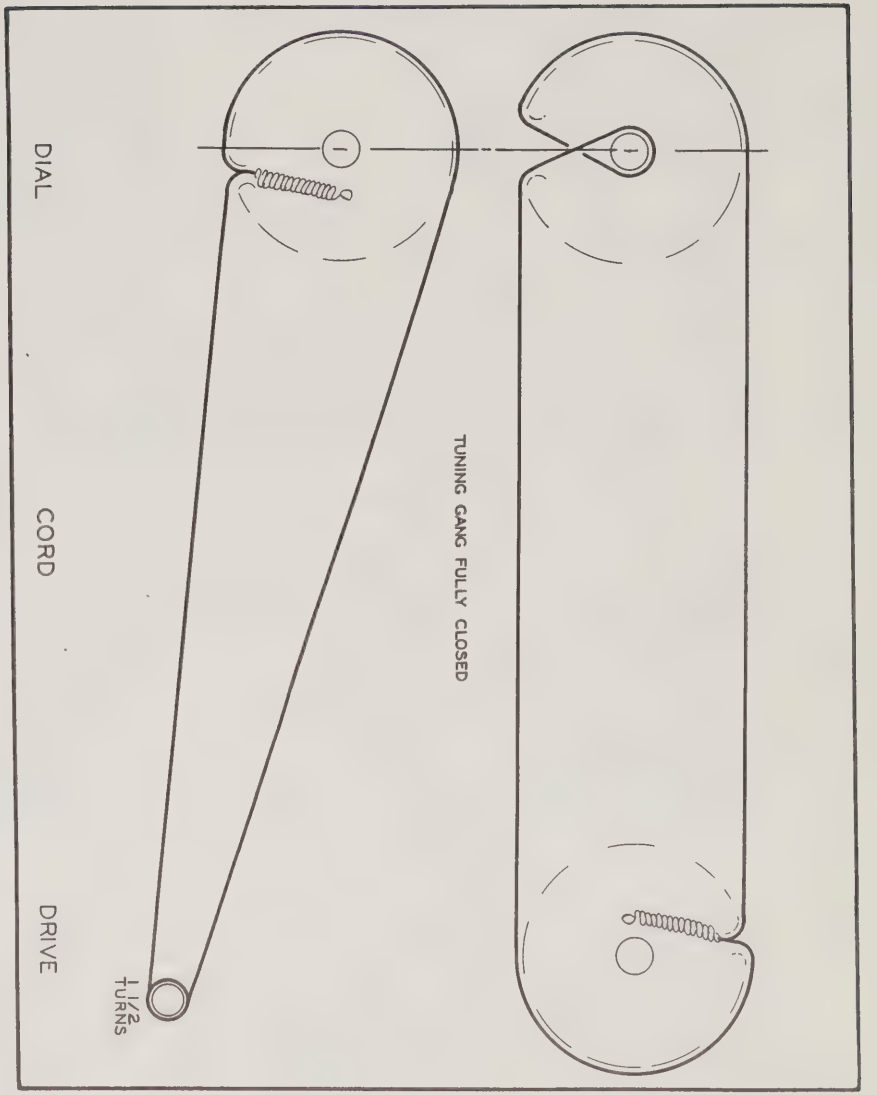
TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	ZENITH PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
88	117V AC @ .75A	680V CT .105ADC	5.4V AC @ 2.0A	6.6V AC @ 2.6A	95-1062	P-6013#‡	T22R32#	

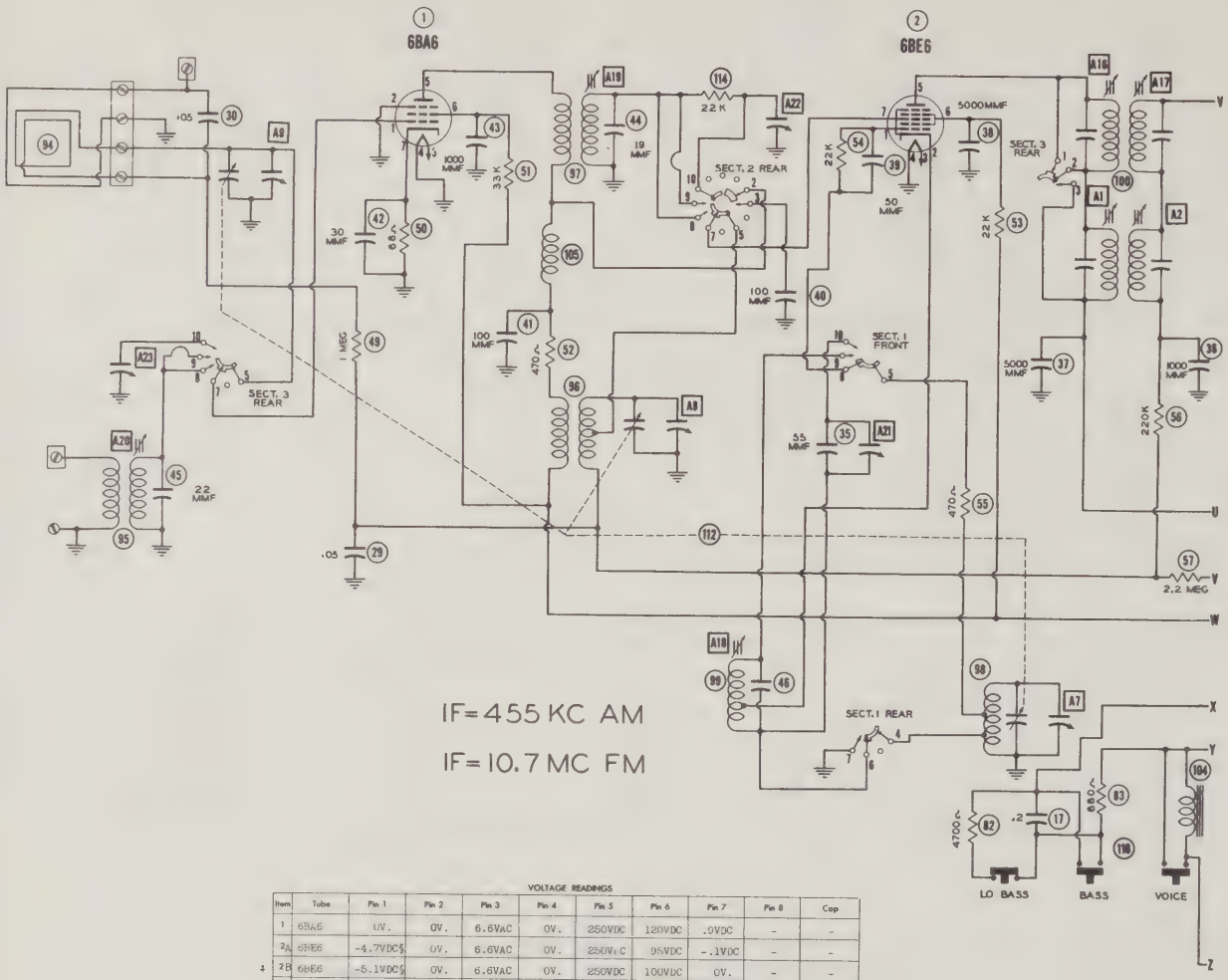
#Drill new mounting holes.
‡Mount vertically with universal mounting b ackets.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
89	5000Ω	3.2Ω tapped @ .4Ω	610Ω	.6Ω tapped @ .4Ω	95-1096	A-3849		A-2002	



DATE 12/48-#4922-24 SET #52-FOLDER #24



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6BA6	0V.	0V.	6.6VAC	0V.	250VDC	120VDC	.9VDC	-	-
2A	6BE6	-4.7VDC§	0V.	6.6VAC	0V.	250VDC	95VDC	-.1VDC	-	-
‡ 2B	6BE6	-5.1VDC§	0V.	6.6VAC	0V.	250VDC	100VDC	0V.	-	-
3	6BA6	-.1VDC	0V.	6.6VAC	0V.	235VDC	130VDC	.9VDC	-	-
4	6AU6	0V.	0V.	6.6VAC	0V.	235VDC	165VDC	.9VDC	-	-
‡ 5	6AU6	-.5VDC	0V.	6.6VAC	0V.	24VDC	70VDC	0V.	-	-
6	6T8	-1VDC	-9.4VDC	-3.1VDC	0V.	6.6VAC	-.8VDC	0V.	-.8VDC	75VDC
7	6V6GT	0V.	6.6VAC	260VDC	260VDC	0V.	285VDC	0V.	12VDC	-
8	5Y3GT	0V.	340VDC	195VDC	340VAC	0V.	340VAC	6.6VAC	340VDC	-

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6BA6	3.4 Meg.	0Ω	.1Ω	0Ω	30KΩ	65KΩ	68Ω	-	-
2A	6BE6	22KΩ	.8Ω	.1Ω	0Ω	33KΩ	55KΩ	2.4 Meg.	-	-
‡ 2B	6BE6	22KΩ	0Ω	.1Ω	0Ω	33KΩ	55KΩ	0Ω	-	-
3	6BA6	3 Meg.	0Ω	.1Ω	0Ω	35KΩ	65KΩ	68Ω	-	-
4	6AU6	2.2Ω	0Ω	.1Ω	0Ω	35KΩ	65KΩ	68Ω	-	-
‡ 5	6AU6	100KΩ	0Ω	.1Ω	0Ω	4KΩ	12KΩ	0Ω	-	-
6	6T8	160KΩ	160KΩ	360KΩ	0Ω	.1Ω	270KΩ	0Ω	15 Meg.	350KΩ
7	6V6GT	0Ω	.1Ω	30KΩ	30KΩ	470KΩ	34KΩ	0Ω	270Ω	-
8	5Y3GT	INF.	30KΩ	130KΩ	100Ω	INF.	10Ω	.1Ω	30KΩ	-

‡TAKEN IN FM100 POSITION.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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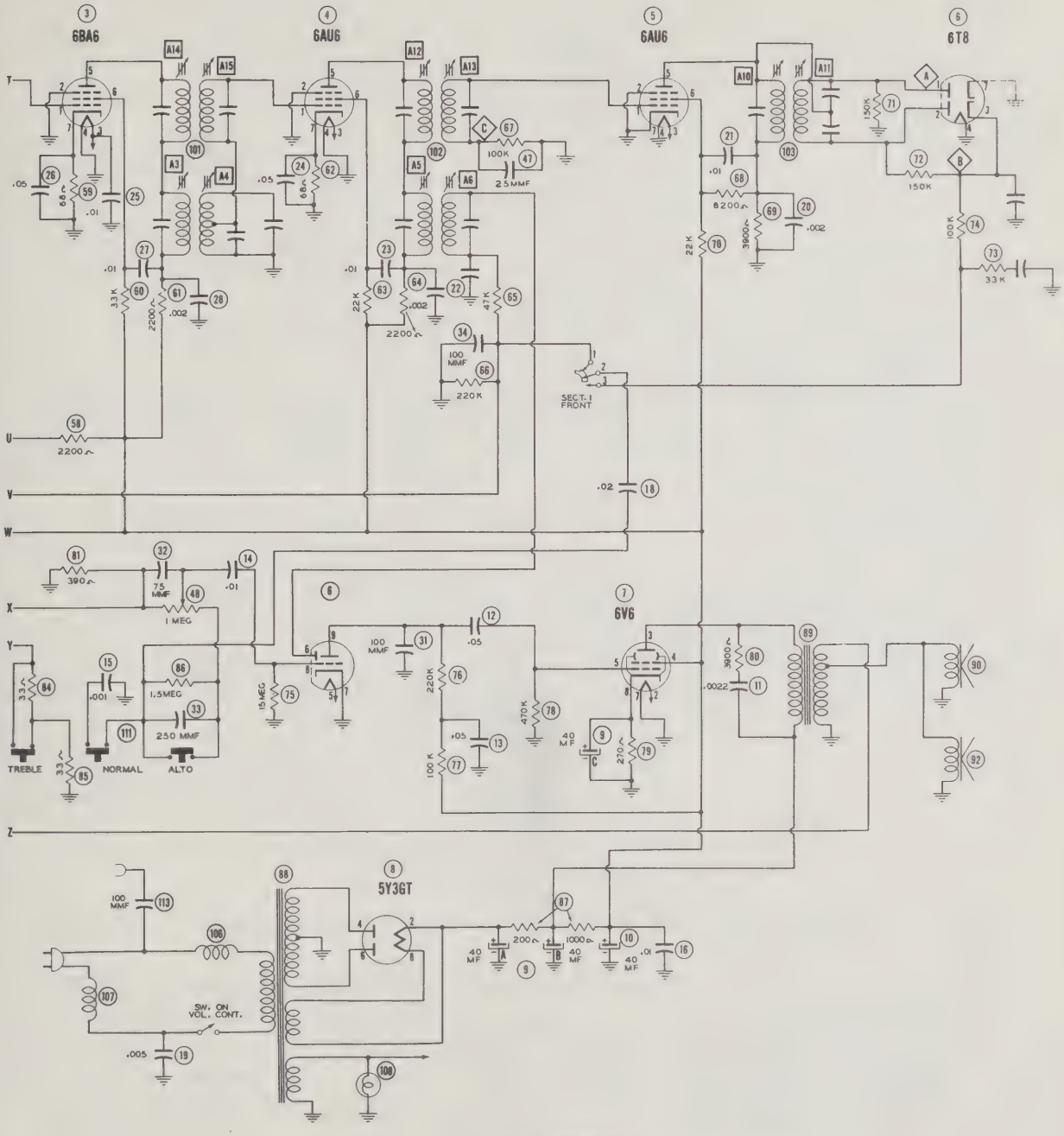

STAGE GAIN MEASUREMENTS

ANTENNA TO RF GRID	10X	600KC	2nd IF TRANS.	.9X	455KC
RF GRID TO CONVERTER GRID	7X	600KC	2nd IF TUBE	200X	455KC
CONVERSION GAIN	14X	IN 600KC OUT 455KC	OUTPUT IF TRANSFORMER	.3X	455KC
1st IF TRANS.	.4X	455KC	AUDIO	35X	400 ~
1st IF TUBE	100X	455KC	OUTPUT	25X	400 ~

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

The alignment slugs in IF Transformers are threaded and screw into the core forms. Care should be exercised in making adjustments as too much pressure will strip the threads and make alignment impossible. Use insulated alignment screwdriver for all adjustments.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD	High side to Pin 7 (grid) of 6BE6. Low side to chassis.	455KC	AM (Fully counter clock-wise)	Tuning cap. fully closed	Across voice coil	A1,A2, A3,A4, A5,A6	Adjust for maximum output.
2		Loop	1600KC	"	1600KC	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	"	Tune for max-imum output.	"	A8,A9	Adjust for maximum output.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4	.01 MFD	High side to Pin 1 (grid) of 6BA6 1st IF Tube (3). Low side to chassis.	10.7MC (Freq. Mod.)	FM45 (fully clock-wise)	Tuning con-trol fully clockwise	Vertical input to Point C. Ground to chassis.	A12, A13, A14. A15	Adjust for maximum amplitude, sym-metry and coincidence of pattern per Fig. 1.
5	.01 MFD	High side to Pin 7 (grid) of 6BE6. Low side to chassis.	"	"	"	"	A16, A17	"
6	.01 MFD	High side to Pin 1 (grid) of 6BA6 1st IF Tube (3). Low side to chassis.	"	"	"	Vertical input to Point B. Ground to chassis.	A10, A11	Alternately adjust A10 for maximum amplitude and straightness of crossover lines and A11 for oc-currence of crossover Point at center of pattern per Fig. 2. Continue with FM RF Alignment in Step 9.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR, VTVM & OUTPUT METER

Lead from VTVM should be shielded.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4	.05 MFD.	High side to Pin 1 (Grid) of 6AU6 Limiter Tube (5). Low side to chassis.	10.7MC (Unmodu-lated)	FM45 (Fully clock-wise)	Tuning con-trol fully clockwise.	DC probe in series with 200KΩ resist-or to Point A. Common to chassis.	A10	Adjust for maximum deflection.
5	.05 MFD.	"	"	"	"	DC probe in series with 200KΩ resist-or to Point B. Common to chassis.	A11	Use zero center scale meter if avail-able. Increase signal input to ob-tain good positive and negative de-flection before adjusting A11 for zero deflection.
6	.05 MFD	High side to Pin 1 (grid) of 6AU6 2nd IF Tube (4). Low side to chassis.	10.7MC (Unmodu-lated)	FM45 (Fully clock-wise)	Tuning con-trol fully clockwise.	DC probe in series with 200KΩ resistor to Point C. Common to chassis.	A12, A13	Adjust for maximum deflection.
7	.05 MFD	High side to Pin1(grid) of 6BA6 1st IF Tube (3). Low side to chassis.	"	"	"	"	A14, A15	" " " "
8	.05 MFD	High side to Pin 7 (grid) of 6BE6. Low side to chassis.	"	"	"	"	A16, A17	Adjust for maximum deflection. Continue with FM RF Alignment in Step 9.

FM RF ALIGNMENT

Loosen Osc., Det. and RF Coil Slugs by applying a hot iron to the cement.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9	470Ω carbon res.	High side to FM ant. terminal. Low side to chassis. Disconnect line antenna.	98MC (Unmodu-lated)	FM100 (Center position)	98MC	DC probe in series with 200KΩ resist-or to Point C. Common to chassis.	A18	Adjust for maximum deflection.
10	"	"	"	"	Tune for max-imum deflec-tion.	"	A19, A20	Rock tuning control and adjust for maximum deflection. Secure tuning slugs with speaker cement.
11	"	"	45MC (Unmodu-lated)	FM45 (Fully clock-wise)	45MC	"	A21	Adjust for maximum deflection.
12	"	"	"	"	Tune for max-imum deflec-tion.	"	A22, A23	Rock tuning control and adjust for maximum deflection.

FIG. 1

FIG. 2

AIRCASTLE MODEL G-724

TRADE NAME	Aircastle, Model G-724
SUPPLIER	Spiegel, Inc., 1061 W. 35th St., Chicago, Ill.
TYPE SET	AC-DC Operated AM-FM Superheterodyne Receiver with Loop Antenna
TUBES (SEVEN)	Types, 6SB7Y Converter, 12SG7 1st IF Amp., 12SG7 2nd IF Amp., 7A6 FM Ratio Det., 12SQ7GT AM Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC or 120 Volts DC — **RATING** .33 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1620KC — **FREQ. MOD.** 87.6-108.4MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

With receiver out of cabinet turn tuning cap. fully closed and mark position of pointer. From this point on the dial backplate measure off and mark the following distances: 1-5/32", 1-3/4", 5-13/16" and 6-5/8" these are 600KC, 92MC, 106MC and 1550KC reference marks referred to in alignment Steps below.

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis.

Use insulated alignment screwdriver for all adjustments.

AM IF ALIGNMENT

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD	High side to rear AM stator of tuning cap. Low side to chassis.	455KC	BC (clock-wise)	Tuning cap. fully open.	Across voice coil	A1,A2, A3	Adjust for maximum output If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.

FM ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

If a VTVM is not available a 20KΩ per volt DC voltmeter may be used as an output indicator.

In Step 3 connect 2 100KΩ resistors in series from Point (A) to chassis. The values of these two resistors must be within 1% of each other. The junction of these 2 resistors is Point B. (See schematic)

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
2	.01 MFD	High side to Pin 4 (grid) 12SG7 2nd IF Tube (3). Low side to chassis.	10.7MC (unmodulated)	FM (counter clock-wise)	Tuning cap. fully open.	DC probe to Point (A) Common to chassis	A4	Adjust for maximum deflection.
3	.01 MFD	"	"	"	"	DC probe to Point (C) Common to B. (See pre-alignment notes)	A5	Adjust for zero deflection
4	.01 MFD	"	10.4MC	"	"	DC probe to Point (A) Common to chassis	A6	Adjust for maximum deflection.
5	.01 MFD	"	11.0MC	"	"	"	A7	Adjust for maximum deflection. Repeat Steps 3, 4 and 5 until no further improvement can be made making Step 3 last adjustment. Disconnect 2 100KΩ resistors.
6	.01 MFD	High side to Pin 4 (grid) 12SG7 1st IF Tube (2). Low side to chassis.	10.7MC	"	"	"	A8,A9	Adjust for maximum deflection.
7	.01 MFD	High side to Pin 8 (grid) 6SB7Y. Low side to chassis.	"	"	"	"	A10,A11	"
8	300Ω carbon resistor	High side to terminal D of ant. terminal strip. Low side to chassis.	92MC	"	92MC reference mark.	"	A12	"
9	"	"	106MC	"	106MC reference mark.	"	A13, A14	Adjust for maximum deflection. Repeat Steps 8 & 9 until no further improvement can be made. Continue with AM RF alignment.

FOR AM-RF AND ALTERNATE FM ALIGNMENT SEE PAGE 4

HOWARD W. SAMS & CO., INC. **Indianapolis Indiana**

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DATE 12/48-#4822-25 SET #52-FOLDER #25

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	6SB7Y	6SB7Y	8R	
2	1st IF Amp.	12SG7	12SG7	8BK	
3	2nd IF Amp.	12SG7	12SG7	8BK	
4	FM Ratio Det.	7A6	7A6	7AJ	
5	AM Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
6	Power Output	35L6GT	35L6GT	7AC	
7	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8A	100	150		PRSA150/50-50	UP55515C*	DSB804020-150	TA-505	Filter-Red & Blk.
B	50	150		PRS150/50			UT-501	" -Blue & Grn.
9	4	450		PRS450/4	BR445	M-4-450	UT-4	Stabilizing Cap.
10	.1	400		484-.1	DT4P1	ST-4-1	TC-1	Line Filter
11	.01	600		684-01	DT6S1	ST-6-01	TC-11	Fil. Bypass
12	.1	600		684-.1	DT6P1	ST-6-1	TC-1	" "
13	.05	600		684-05	DT6S5	ST-6-05	TC-15	" "
14	.005	400		484-005	DT6D5	ST-6-005	TC-25	Output Plate Bypass
15	.02	600		684-02	DT6S2	ST-6-02	TC-12	Audio Coupling
16	.005	400		484-005	DT6D5	ST-6-005	TC-25	" "
17	.01	600		684-01	DT6S1	ST-6-01	TC-11	Tone Compensation
18	.01	600		684-01	DT6S1	ST-6-01	TC-11	RF Bypass
19	.01	600		684-01	DT6S1	ST-6-01	TC-11	2nd IF Screen Bypass
20	.01	600		684-01	DT6S1	ST-6-01	TC-11	1st IF Decoupling
21	.05	400		484-05	DT4S5	ST-4-05	TC-15	Conv. Decoup.
22	.05	600		684-05	DT6S5	ST-6-05	TC-15	AVC Filter
23	.01	600		684-01	DT6S1	ST-6-01	TC-11	Ext. Ant. Isolation
24	.003	600		684-003	DT6D3	ST-6-003	TC-23	Tone Comp.-See Note
25	220	500		1468-00025	5W5T25	MO.5-325	1FM-325	Diode Filter
26	22	500		1468-000025	5W5Q25	MO.5-425	MS-42	AM IF Coupling
27	2200	300						Fixed Trimmer
28	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	Tone Compensation
29	1000	300		1468-001	1W5D1	MO.3-21	1FM-21	Diode Load Cap.
30	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	Osc. Grid Cap.
31	220	500		1468-00025	5W5T25	MO.5-325	1FM-325	RF Bypass
32	220	500		1468-00025	5W5T25	MO.5-325	1FM-325	Fil. Bypass
33	33	500						Fixed Pad-Silver
34	10	500		1468-00001	5W5Q1	MO.5-41	MS-41	RF Coupling
35	820	300		1468-00075	1W5T8	MO.3-38	MS-38	RF Bypass-See Note
36	470	500		1468-0005	5W5T5	MO.5-35	1FM-35	RF Bypass-See Note
37	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	Output Grid Bypass

Note-Not used in all models.
*Omit one section.

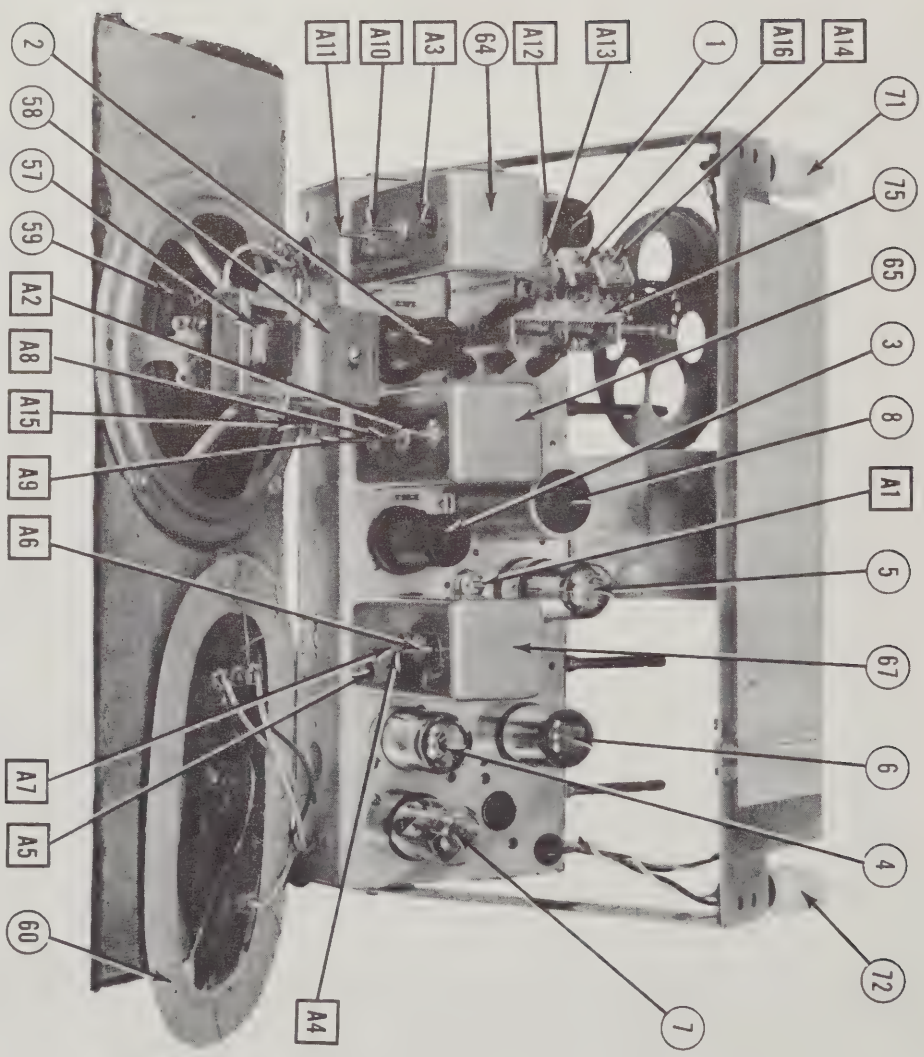
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
38	1 Meg.	½	RP11-105B			Volume Control and Switch tapped @ 150KΩ and 300KΩ

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
39	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
40	330Ω	1			Or.-Or.-Br. Converter Decoupling
41	1.2 Meg.	½		BTS-1.2 Meg.	Br.-Red-Grn. Bias Network-See Note 1
42	150Ω	½			Br.-Grn.-Br. 2nd IF Screen Decoup.
43	22KΩ	½		BTS-22K	Red-Red-Or. Ratio Detector Diode Load
44	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Tone Compensation
45	33KΩ	½		BTS-33K	Or.-Or.-Or. " "
46	33KΩ	½		BTS-33K	Or.-Or.-Or. " " -See Note 1

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIRCASTLE PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
47	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
48	220KΩ	½		BTS-220K	Red-Red-Yl. Diode RF Filter
49	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. Diode Load
50	5.6 Meg.	½		BTS-5.6 Meg.	Grn.-Blue-Grn. AF Grid-See Note 2
51	330KΩ	½		BTS-330K	Or.-Or.-Yl. AF Plate Load
52	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
53	680Ω	1		BTA-680	Blue-Gray-Br. Filter-See Note 3
54	47Ω	1		BW-1-47	Yl.-Vi.-Blk. Bias Network-See Note 4
55	150Ω	½			Br.-Grn.-Br. Filament Shunt-See Note 1
56	68Ω	1			Blue-Gray-Blk. " " " " "

Note 1-Not used in all models.
Note 2-Some models use 4.7 Meg. in this application. IRC replacement BTS-4.7 Meg.
Note 3-Some models use two 330Ω in series in this application. Replacement same as above.
Note 4-Some models use 68Ω in series in this application. IRC replacement BW-1-68.

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA AIRCASTLE PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDARSON PART No.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
57	1650Ω	3.4Ω	225Ω	.6Ω		A-3876	T22S45	A-2928	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA AIRCASTLE PART No.	REPLACEMENT DATA JENSEN PART No.	REPLACEMENT DATA QUAM PART No.	INSTALLATION NOTES
	FIELD RES.	VC IMP.		ST-110		
58	PM	3.4Ω		Mod. P6-V	6A21	
	CONE DIA.	VC DIA.				
59	6"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA AIRCASTLE PART No.	REPLACEMENT DATA MEISSNER PART No.	
60	Loop Ant.		.8Ω			
61	FM Ant.Coil		0Ω	LR17		
62	AM Osc.Coil	.5Ω	4.3Ω	LO14	14-1060	
63	FM " "		0Ω	LO13		
64A	AM 1st IF	.8Ω		TM6		
B	FM 1st IF	.1Ω				
65A	AM 2nd IF	.8Ω†		TM15		†Includes both primaries
B	FM 2nd IF		.1Ω			
66	AM 3rd IF		.6Ω	TM14		
67	Ratio Det.		.2Ω	TM9		
68	Wave Trap		0Ω	LF8		
69	" "		0Ω	LF8		
70	IF Plate Choke		2.2Ω	LF9		

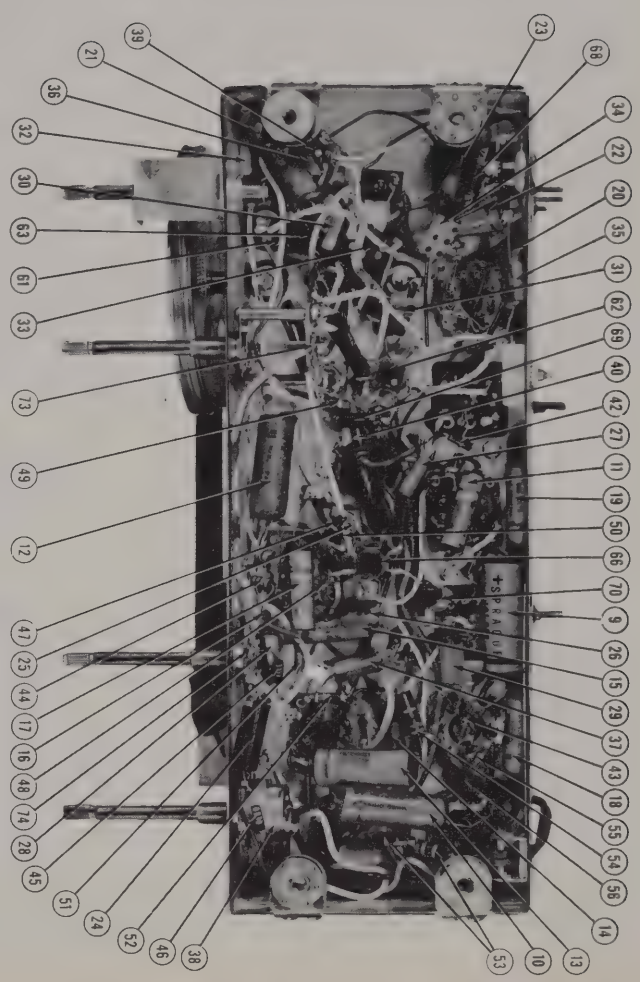
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA AIRCASTLE PART No.		INSTALLATION NOTES
71	Screw	120					Type 47
72	"	120					" "

MISCELLANEOUS

ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
73	Switch	SR28	Band
74	"	SR25-2	Tone
75	2 Gang Var. Cap	CV15-1	(37-430MMF) each section

CHASSIS—BOTTOM VIEW



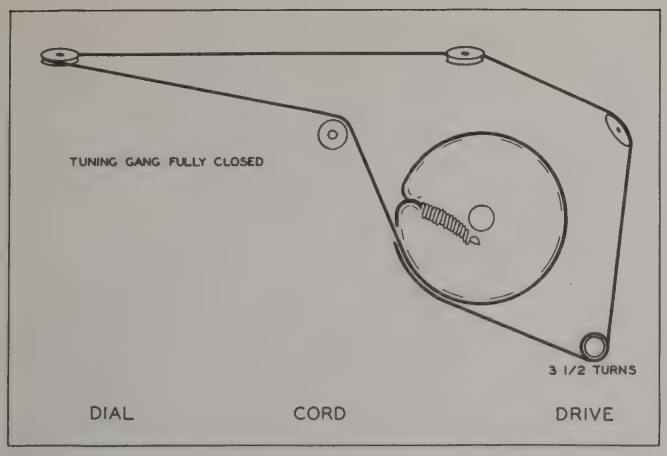


FIG. 1

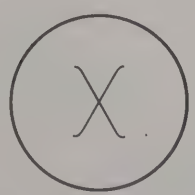


FIG. 2

FOR AM-IF AND ALTERNATE FM ALIGNMENT SEE PAGE 1.

FM ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal 450KC sweep with 60∿ modulation except in Step 3 where 225KC sweep is used. Use 120∿ sawtooth voltage in scope for horizontal deflection.

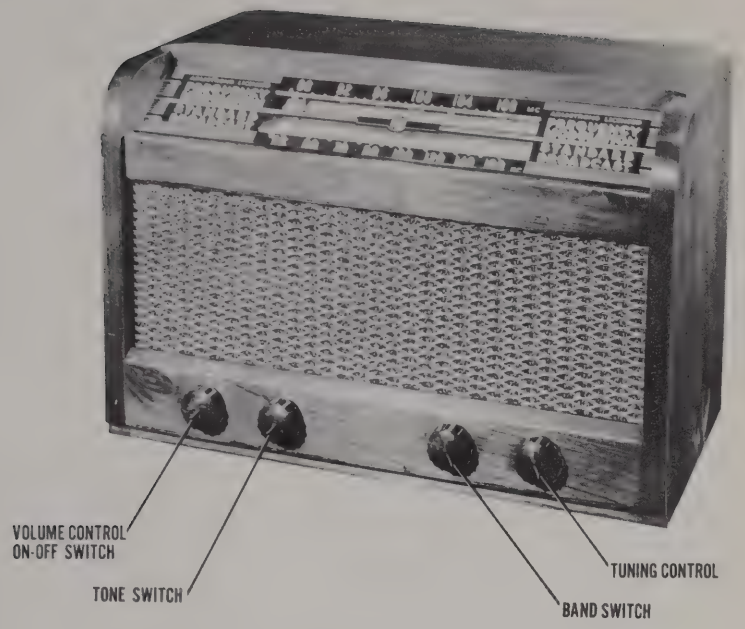
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
2	.01 MFD	High side to Pin 4 (grid) 12SG7 1st IF Tube (2). Low side to chassis.	10.7MC (freq. modulated	FM (counter clock-wise)	Tuning cap. fully open.	Vertical input to Point ◇ Ground to chassis.	A4,A8, A9	Disconnect 5 MFD cap. from Point ◇ Adjust A4, A8, A9 for maximum amplitude, symmetry and coincidence of pattern per Figure 1.
3	.01 MFD	High side to Pin 8 (grid) 6SB7Y. Low side to chassis.	"	"	"	"	A10,A11	Adjust for maximum amplitude, symmetry & coincidence of pattern per Figure 1.
4	.01 MFD	High side to Pin 4 (grid) 12SG7 1st IF Tube (2). Low side to chassis.	10.7MC (freq. modulated 225KC sweep)	"	"	Vertical input to Point ◇ Ground to chassis.	A5,A6, A7	Reconnect 5 MFD cap. to Point ◇ Alternately adjust A5 & A7 for peaks occurring about 200KC from center of pattern and A5 for maximum straightness of crossover lines with crossover occuring at center of pattern per Fig. 2.
5	300Ω carbon res.	High side to terminal D of ant. terminal strip. Low side to chassis.	92MC	"	92MC reference mark	Vertical input to Point ◇ Ground to chassis.	A12	Disconnect 5 MFD cap. from Point ◇ Adjust A12 for coincidence of pattern per Fig. 1.
6	"	"	106MC	"	106MC reference mark.	"	A13, A14	Adjust A13 for coincidence, adjust A14 for maximum amplitude of pattern per Fig. 1. Repeat Steps 5 & 6 until no further improvement can be made. Reconnect 5 MFD cap. to Point ◇ and continue with Am RF Alignment.

AM RF ALIGNMENT

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
10	100MMFD	High side to terminal A on ext. ant. terminal strip. Low side to chassis.	600KC	BC	600KC reference mark	across voice coil	A15	Adjust for maximum output
11	100MMFD	"	1550KC	"	1550KC reference mark	"	A16	Adjust for maximum output Repeat Steps 10 & 11 until no further improvement can be made.

DATE 12/48-#4822-25 SET #52-FOLDER #25



VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SB7Y	0V.	4VAC	87VDC	87VDC	-10VDC§	0V.	6.6VAC	-.3VDC
2	12SG7	0V.	29VAC	0V.	-.5VDC	0V.	83VDC	41VAC	83VDC
‡ 3	12SG7	0V.	16VAC	0V.	-.5VDC	0V.	92VDC	29VAC	92VDC
‡ 4	7A6	13VAC	0V.	0V.	0V.	0V.	0V.	0V.	16VAC
5	12SQ7GT	0V.	-.5VDC	0V.	0V.	-2.6VDC	55VDC	13VAC	4VAC
6	35L6GT	0V.	41VAC	105VDC	92VDC	-2.5VDC	-3.5VDC	77VAC	0V.
7	35Z5GT	0V.	111VAC	105VAC	111VAC	111VAC	52VAC	77VAC	115VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

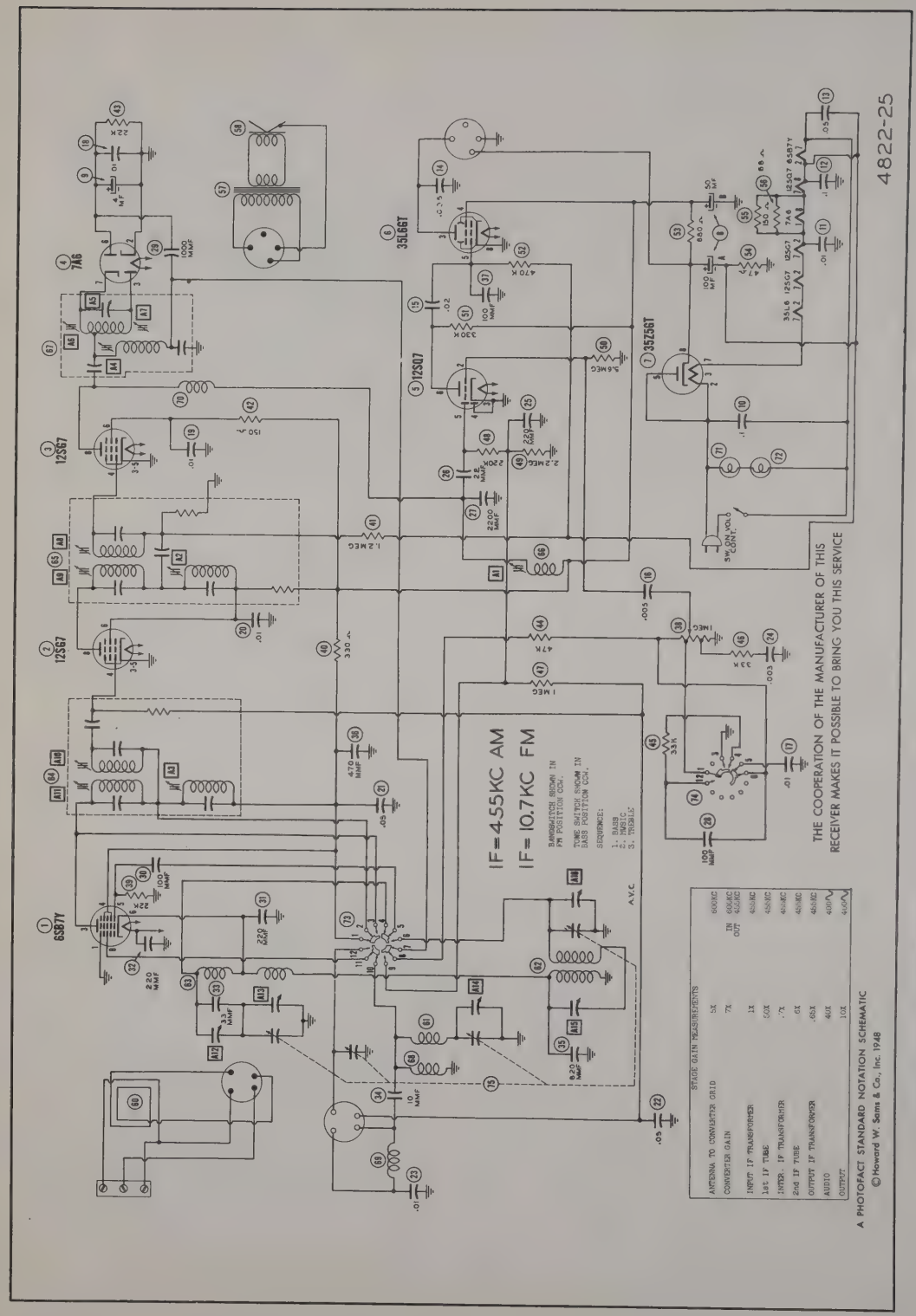
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SB7Y	0Ω	46Ω	60KΩ	60KΩ	22KΩ	.5Ω	50Ω	2.2 Meg.
2	12SG7	0Ω	75Ω	0Ω	2 Meg.	0Ω	60KΩ	85Ω	60KΩ
‡ 3	12SG7	0Ω	62Ω	0Ω	340KΩ	0Ω	60KΩ	75Ω	60KΩ
‡ 4	7A6	58Ω	0Ω	1 Meg.	INF.	0Ω	22KΩ	1 Meg.	62Ω
5	12SQ7GT	0Ω	5 Meg.	0Ω	0Ω	1.2 Meg.	390KΩ	58Ω	46Ω
6	35L6GT	INF.	85Ω	60KΩ	60KΩ	470KΩ	46Ω	115Ω	0Ω
7	35Z5GT	INF.	135Ω	130Ω	135Ω	135Ω	170Ω	115Ω	60KΩ

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.


4822-25
IF=4.55KC AM
IF=10.7KC FM
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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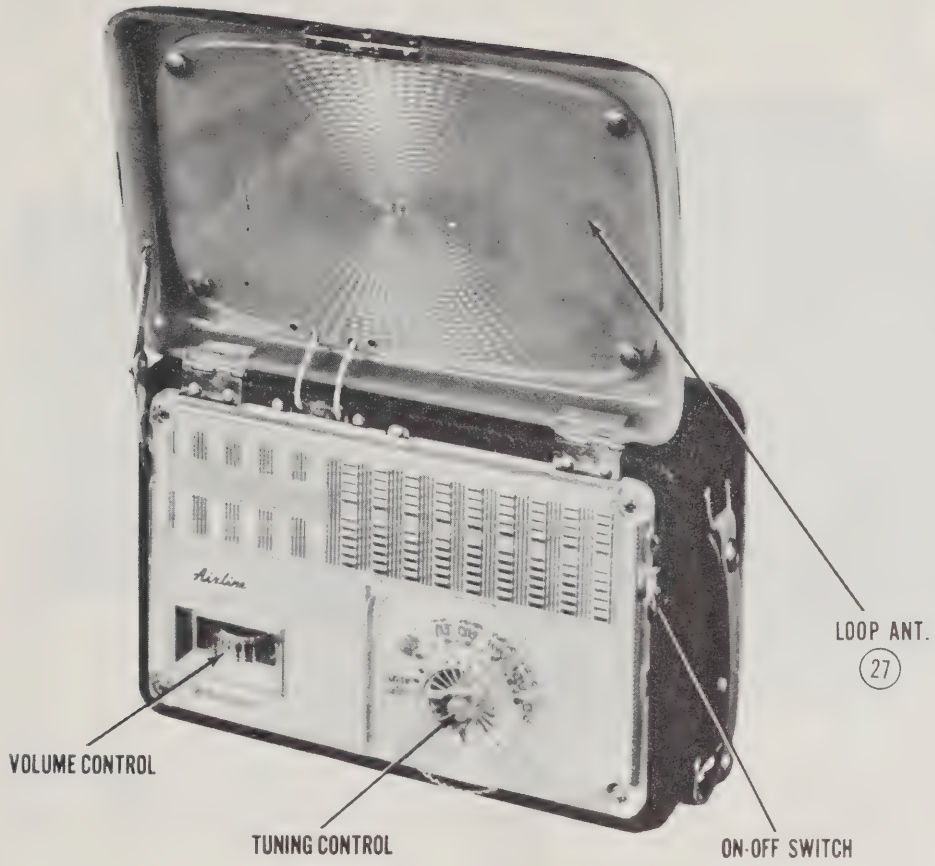
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

DATE 12-48-4822-25 SET #S2-FOLDER #26

AIRLINE MODEL 84GCB-1062A
BATTERY OPERATED



AIRLINE MODEL 84GCB-1062A
BATTERY OPERATED

AIRLINE MODEL 84GCB-1062A

TRADE NAME	Airline, Model 84GCB-1062A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	Battery Operated Portable Superheterodyne with Loop Antenna
TUBES (FOUR)	Types, 1R5 Converter, 1T4 IF Amp., 1S5 Det.-AVC-AF, 3S4 Power Output.
POWER SUPPLY RATING	1.5 Volts "A" Supply and 67.5 Volts "B" Supply 260MA @ 1.5V DC and 9MA @ 67.5V DC
TUNING RANGE--BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS--READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Extend loop leads and solder to original points.
Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2		Place sig. gen. leads near loop of receiver.	1650KC	"	"	A5	" " " "
3		"	1500KC	Tune for maximum output.	"	A6	" " " "
4		"	600KC	"	"	A7	Rock tuning cap. and adjust for maximum output. Repeat Steps 2, 3 and 4 until no further improvement can be made.
5	Reinstall receiver in case and tune in a weak station near 1500KC. Adjust A6 for maximum volume.						

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PARTS LIST AND DESCRIPTIONS

AIRLINE MODEL 84GCB-1062A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1T4	1T4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3S4	3S4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5	8	100	5.417		BR815	M-8-150		Power Supply Bypass
6	.001	150			ZZ1D1	TTR-1.5-001		Output Plate Bypass
7	.002	200	3.101-3		ZZ1D2	TTR-1.5-002		Audio Coupling
8	.02	150	3.101-11		ZY1S2	TTR-1.5-02		AF Screen Bypass
9	.002	200	3.101-3		ZZ1D2	TTR-1.5-002		Audio Coupling
10	.02	150	3.101-11		ZY1S2	TTR-1.5-02		AVC Filter
11	.02	150	3.101-11		ZY1S2	TTR-1.5-02		IF Screen Bypass
12	47		3.109-12					AF Plate Bypass-Cer.
13	47		3.109-12					Diode RF Filter "
14	47		3.109-12					Osc. Grid Cap. "

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
15	2 Meg.	½	8.216-1			Volume Control

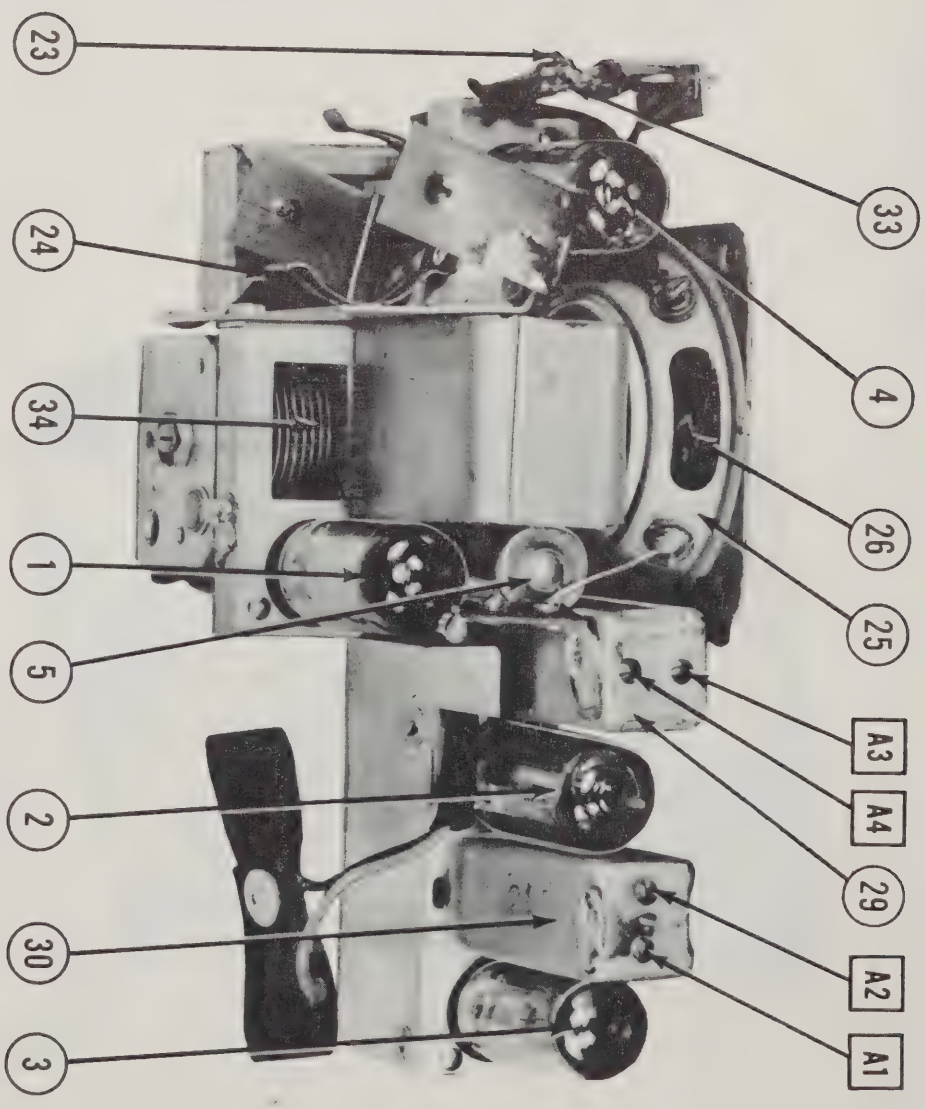
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	IDENTIFICATION CODES
16	100KΩ	1/8	7.105-45	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
17	4700Ω	1/8	7.105-13	BTS-4700	Yl.-Vi.-Red Screen Dropping
18	3.3 Meg.	1/8	7.105-101	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
19	10 Meg.	1/8	7.105-171	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
20	4.7 Meg.	1/8	7.105-164	BTS-4.7 Meg	Yl.-Vi.-Grn. AF Screen Dropping
21	1 Meg.	1/8		BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
22	3.3 Meg.	1/8	7.105-101	BTS-3.3 Meg.	Or.-Or.-Grn. Output Grid
23	820Ω	1/8	7.105-185	BTS-820	Gray-Red-Br. Bias

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	INSTALLATION NOTES
24	9000Ω	3.2Ω	670Ω	.5Ω	9.207-A	A-3329		A-2998	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA AIRLINE PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.				
25	PM	3.3Ω	30.315			
	CONE DIA.	VC DIA.				
26	2-7/16"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA AIRLINE PART No.	MEISSNER PART No.	
27	Loop Ant.		4.5Ω	35-209		
28	Osc. Coil	2Ω	11Ω	1.466		
29	Input IF	36Ω	36Ω	1.412-2		
30	Output IF	32Ω	34Ω	1.413-2		

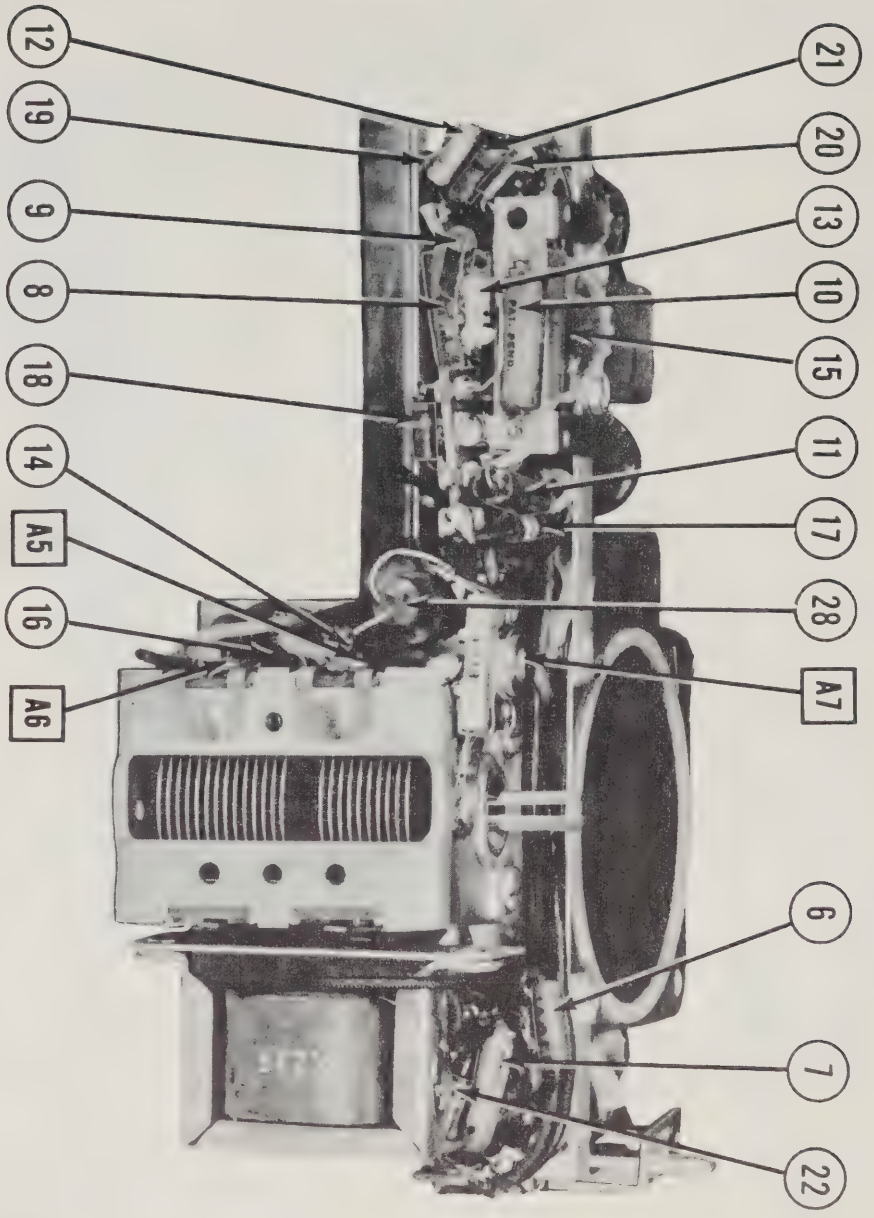
BATTERIES

ITEM No.	VOLTAGE	AIRLINE PART No.	REPLACEMENT DATA EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
31	1½V "A"		#950			2R			
32	67½V "B"			#467			XX45		

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
33	On-Off Switch	11.214	
34	2 Gang Var. Cap	2.212	(27-348MMF, 13-241MMF)
	Knob	13.123	Tuning
	"	13.124	Volume
	Cabinet	35.246	

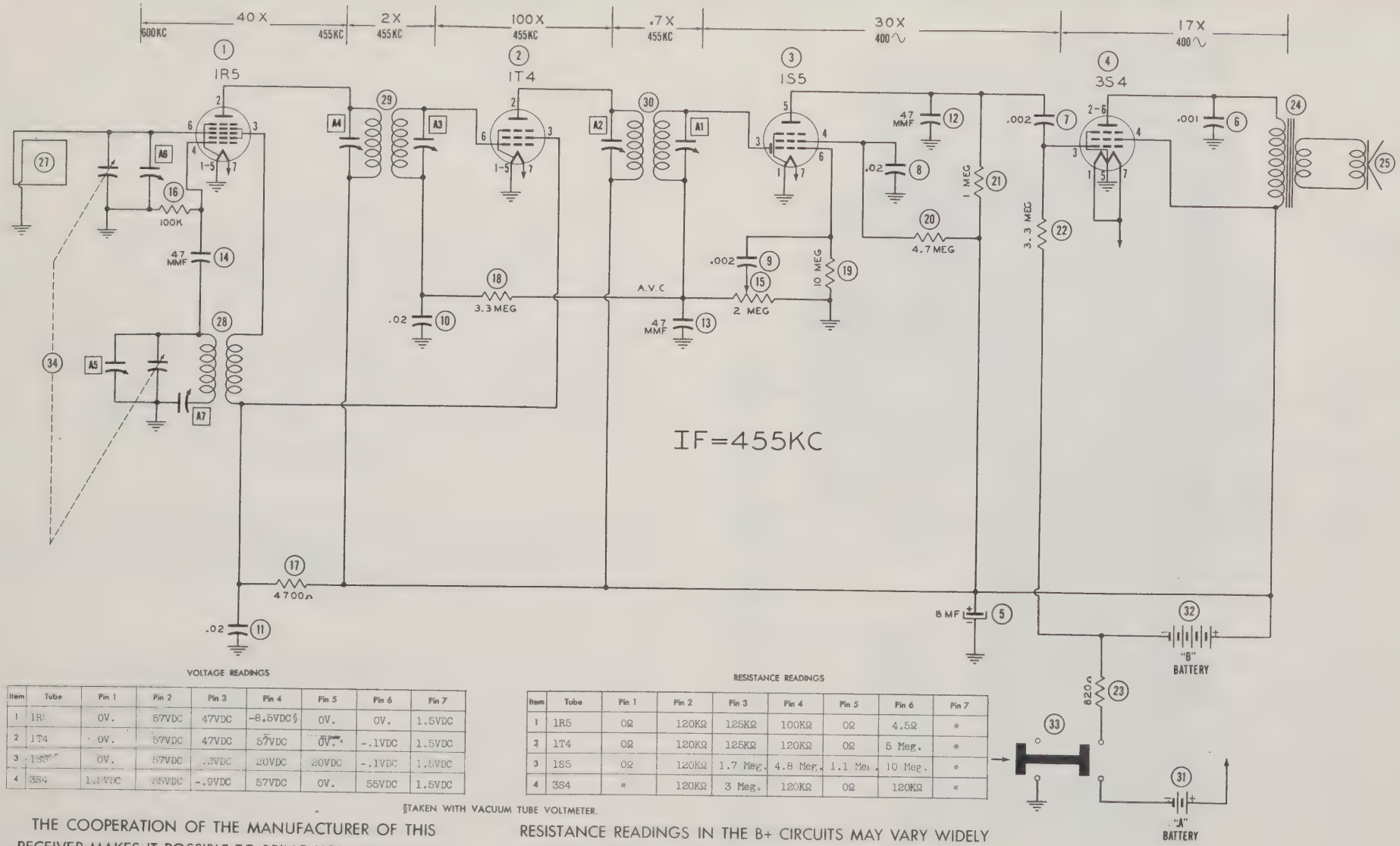
CHASSIS—BOTTOM VIEW



AIRLINE MODEL 84GCB-1062A

DATE 12/48-#46822-26 SET #52-FOLDER #26

AIRLINE MODEL 84GCB-1062A



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	0V.	57VDC	47VDC	-8.5VDC§	0V.	0V.	1.5VDC
2	1T4	0V.	57VDC	47VDC	57VDC	0V.	-.1VDC	1.5VDC
3	1S5	0V.	57VDC	.3VDC	20VDC	20VDC	-.1VDC	1.5VDC
4	3S4	1.4VDC	55VDC	-.9VDC	57VDC	0V.	55VDC	1.5VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	0Ω	120KΩ	125KΩ	100KΩ	0Ω	4.5Ω	*
2	1T4	0Ω	120KΩ	125KΩ	120KΩ	0Ω	5 Meg.	*
3	1S5	0Ω	120KΩ	1.7 Meg.	4.8 Meg.	1.1 Meg.	10 Meg.	*
4	3S4	*	120KΩ	3 Meg.	120KΩ	0Ω	120KΩ	*

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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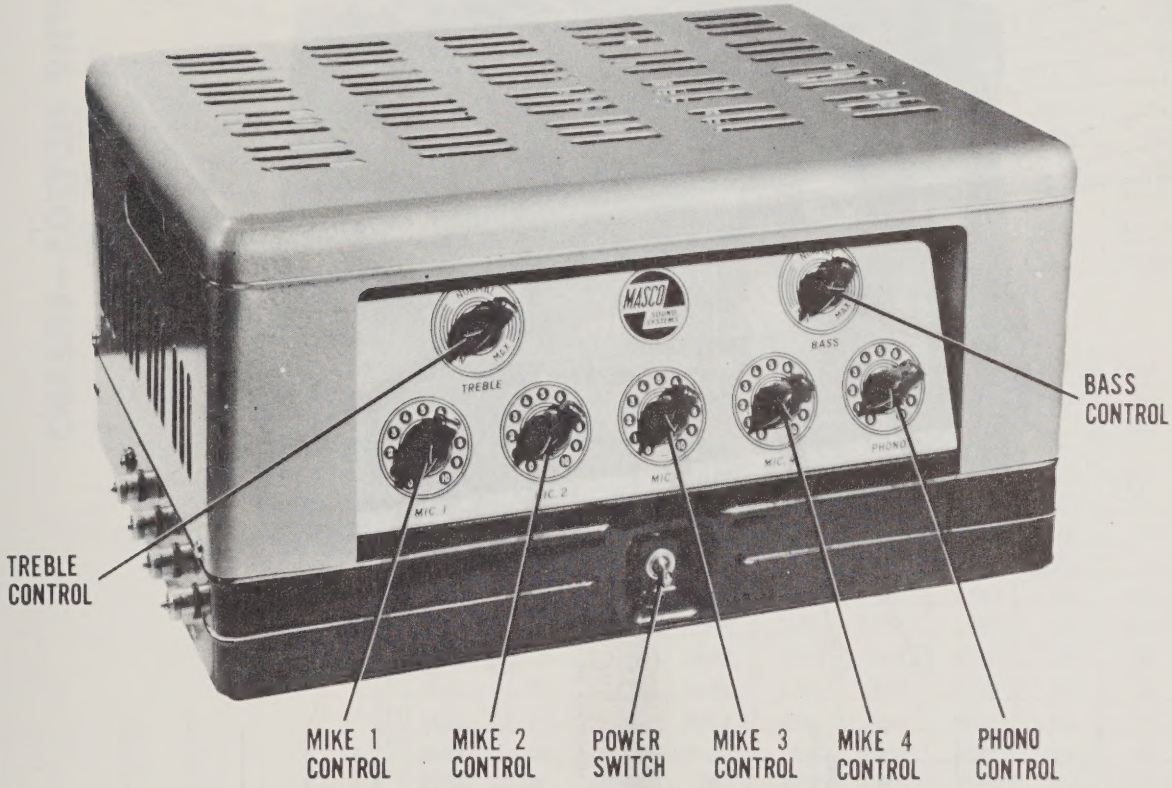
4822-26

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting to chassis.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5 - Volume control at maximum, no signal applied for voltage meausrements.

MASCO MODEL
MA-75N



MASCO MODEL
MA-75N

MASCO MODEL MA-75N

TRADE NAME	Masco, Model MA-75N
MANUFACTURER	Mark Simpson Mfg. Co., Inc., 32-28 49th St., Long Island City, N.Y.
TYPE SET	AC Operated Five Channel Audio Amplifier
TUBES (FIFTEEN)	Types, 6J7 Mic. 1 Amp., 6J7 Mic. 2 Amp., 6J7 Mic. 3 Amp., 6J7 Mic. 4 Amp., 6SC7 Mixer-AF, 6SC7 Phase Inv., (2) 6V6GT Driver, (4) 6L6G Power Output, 5Y3GT Rectifier, (2) 5U4G Rectifier
POWER SUPPLY	105-117 Volts AC RATING 2.2 Amp. @ 117 Volts AC

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DATE 12/48-#4822-27 SET #52-FOLDER #27

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MASCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Mic. 1 Amp.		6J7	7R	
2	Mic. 2 Amp.		6J7	7R	
3	Mic. 3 Amp.		6J7	7R	
4	Mic. 4 Amp.		6J7	7R	
5	Mixer-AF		6SC7	8S	
6	Phase Inv.		6SC7	8S	
7	Driver		6V6GT	7AC	
8	"		6V6GT	7AC	
9	Power Output		6L6G	7AC	
10	" "		6L6G	7AC	
11	" "		6L6G	7AC	
12	" "		6L6G	7AC	
13	Rectifier		5Y3GT	5T	
14	"		5V4G	5L	
15	"		5V4G	5L	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

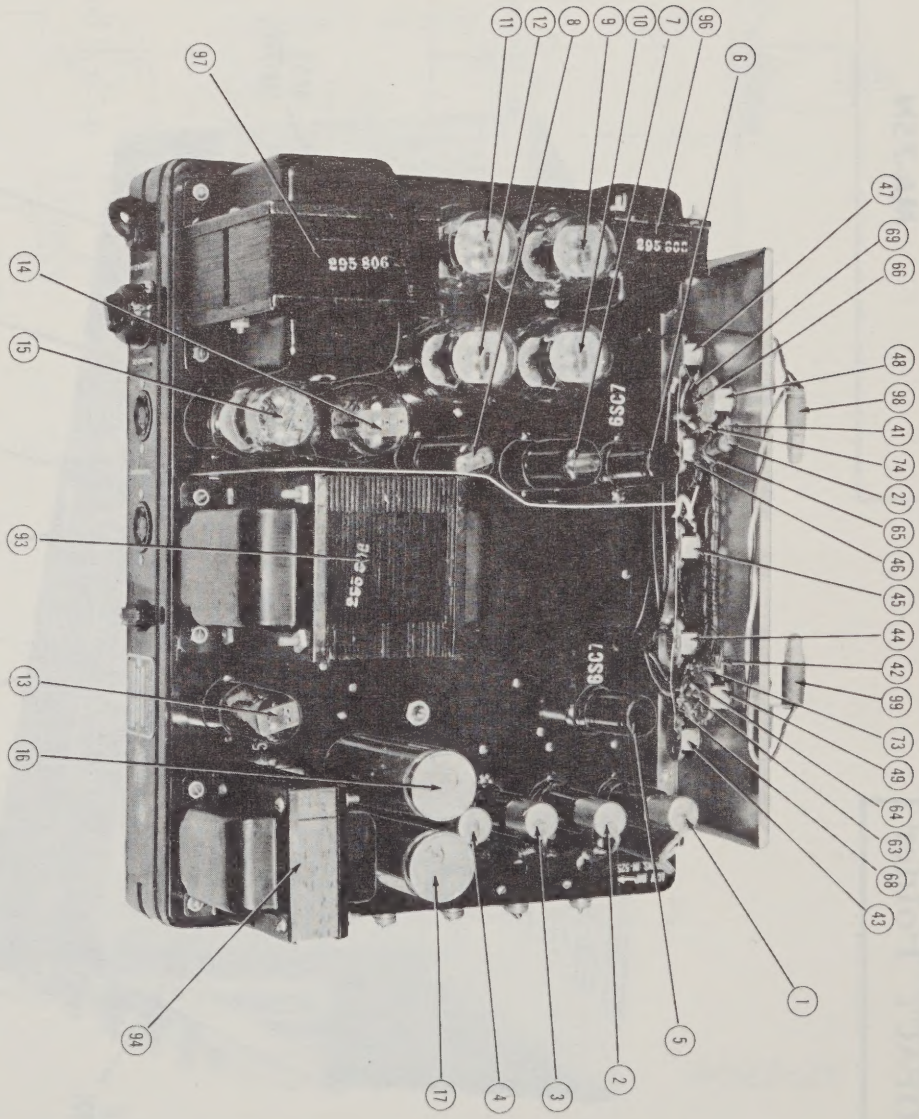
ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MASCO PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
16	8	600		GL600/8	KR608	D-8-600	AP-86	Filter
17	8	600		GL600/8	KR608	D-8-600	AP-86	"
18	16	450		PRS450/16	BR1645	M-16-450	UT-16	"
19	16	450		PRS450/16	BR1645	M-16-450	UT-16	"
20	80	150		PRSA150/40-40*	EDL4415*	DSB-2x40-150*	TA-440*	Bias Filter
21	8	450		PRS150/8	BR845	M-8-450	UT-8	Decoupling
22A	8	450		PRSA450/8-8	EZ8845	DH-2x8-450	TU-88	"
B	8	450						"
23	.1	600		630-.1	DYR6010	XDMR6-.1	BP-16	Line Filter
24	.005	600		684-005	DT6D5	ST-6-005	TC-25	Tone Compensation
25	.05	600		684-05	DT6S5	ST-6-05	TC-15	Audio Coupling
26	.05	600		684-05	DT6S5	ST-6-05	TC-15	" "
27	.005	600		684-005	DT6D5	ST-6-005	TC-25	Tone Compensation
28	.1	600		684-.1	DT6P1	ST-6-.1	TC-1	Audio Coupling
29	.01	600		684-01	DT6S1	ST-6-01	TC-11	" "
30	.01	600		684-01	DT6S1	ST-6-01	TC-11	" "
31	.01	600		684-01	DT6S1	ST-6-01	TC-11	" "
32	.01	600		684-01	DT6S1	ST-6-01	TC-11	" "
33	.1	600		684-.1	DT6P1	ST-6-1	TC-1	Screen Bypass
34	.1	600		684-.1	DT6P1	ST-6-1	TC-1	" "
35	.1	600		684-.1	DT6P1	ST-6-1	TC-1	" "
36	.1	600		684-.1	DT6P1	ST-6-1	TC-1	" "
37	.005	600		684-005	DT6D5	ST-6-005	TC-25	Audio Coupling
38	.005	600		684-005	DT6D5	ST-6-005	TC-25	" "
39	.005	600		684-005	DT6D5	ST-6-005	TC-25	" "
40	.005	600		684-005	DT6D5	ST-6-005	TC-25	" "
41	500	500		1468-0005	5W5T5	MO.5-35	1FM-35	Tone Compensation
42	500	500		1468-0005	5W5T5	MO.5-35	1FM-35	" "

*Parallel sections to obtain desired capacity.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MASCO PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
43A	500KΩ	½		D13-133	M-60-Z	Mike 1 Control
B	Shaft			A	Not Req.	Attach to 43A per instructions
44A	500KΩ	½		D13-133	M-60-Z	Mike 2 Control
B	Shaft			A	Not Req.	Attach to 44A per instructions
45A	500KΩ	½		D13-133	M-60-Z	Mike 3 Control
B	Shaft			A	Not Req.	Attach to 45A per instructions
46A	500KΩ	½		D13-133	M-60-Z	Mike 4 Control
B	Shaft			A	Not Req.	Attach to 46A per instructions
47A	500KΩ	½		D13-133	M-60-Z	Phono Control
B	Shaft			A	Not Req.	Attach to 47A per instructions
48A	500KΩ	½		D13-133	M-60-Z	Bass Control
B	Shaft			A	Not Req.	Attach to 48A per instructions
49A	500KΩ	½		D13-133	M-60-Z	Treble Control
B	Shaft			A	Not Req.	Attach to 49A per instructions
50	50Ω	1		W-50	43-50	Hum Balance Control

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MASCO PART No.	IRC PART No.	
51	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-Blue 1st Mic. Amp. Grid
52	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-Blue 2nd Mic. Amp. Grid
53	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-Blue 3rd Mic. Amp. Grid
54	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-Blue 4th Mic. Amp. Grid
55	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. 1st Mic. Amp. Screen
56	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. 2nd Mic. Amp. Screen
57	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. 3rd Mic. Amp. Screen
58	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. 4th Mic. Amp. Screen
59	270KΩ	½		BTS-270K	Red-Vi.-Yl. 1st Mic. Amp. Plate Load
60	270KΩ	½		BTS-270K	Red-Vi.-Yl. 2nd Mic. Amp. Plate Load
61	270KΩ	½		BTS-270K	Red-Vi.-Yl. 3rd Mic. Amp. Plate Load
62	270KΩ	½		BTS-270K	Red-Vi.-Yl. 4th Mic. Amp. Plate Load
63	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Isolation
64	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. "
65	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. "
66	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. "
67	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Decoupling
68	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Isolation
69	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. "
70	1000Ω	½		BTS-1000	Br.-Blk.-Red Mixer Cathode
71	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Mixer Plate Load
72	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Mixer Plate Decoup.
73	270KΩ	½		BTS-270K	Red-Vi.-Yl. Tone Compensation
74	27KΩ	½		BTS-27K	Red-Vi.-Or. " "
75	1000Ω	½		BTS-1000	Br.-Blk.-Red AF Phase Inv. Cathode
76	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AF Plate Load
77	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Phase Inv. Plate Load
78	8200Ω	½		BTS-8200	Gray-Red-Red Phase Inv. Grid
79	270KΩ	½		BTS-270K	Red-Vi.-Yl. 1st Driver Grid
80	270KΩ	½		BTS-270K	Red-Vi.-Yl. 2nd Driver Grid
81	400Ω	10		AB-400	Yl.-Blk.-Br. Driver Cathode
82	12KΩ	½		BTS-12K	Br.-Red-Or. Decoupling
83	18Ω	½		BW-½-18	Br.-Gray-Blk. Parasitic Suppressor
84	18Ω	½		BW-½-18	Br.-Gray-Blk. " "
85	18Ω	½		BW-½-18	Br.-Gray-Blk. " "
86	18Ω	½		BW-½-18	Br.-Gray-Blk. " "
87	18Ω	½		BW-½-18	Br.-Gray-Blk. " "
88	18Ω	½		BW-½-18	Br.-Gray-Blk. " "
89	13Ω	½		BW-½-18	Br.-Gray-Blk. " "
90	18Ω	½		BW-½-18	Br.-Gray-Blk. " "
91	10KΩ	20W		DG-10K	Br.-Blk.-Or. Bleeder
92	250Ω	10W		ABA-250	Red-Grn.-Br. Bias

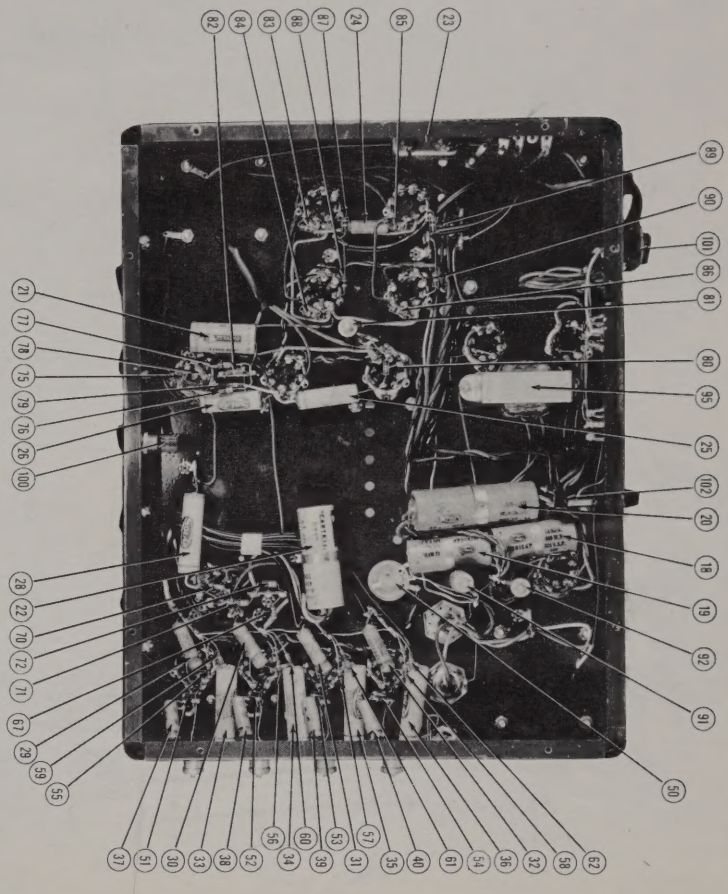
TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MASCO PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
93	117V AC @ 2.2A	630V CT .95A DC	910V CT @ .24A DC	5.6V AC @ 2.0A	A-75			
			SEC. 4	SEC. 5				
			5.6V AC @ 4.0A	6.8V AC @ 6.0A				

FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	MASCO PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	
94	.235A	68Ω	6 Henries	C-575	C-1702#	T20C56#	C-3196#	#Drill new mounting
95	.096A	130Ω	3.2 Henries	C-178	C-2303	T20C54	C-2993#	holes.

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	RATING			REPLACEMENT DATA				INSTALLATION NOTES
	TURNS RATIO	DC RES. PRI.	DC RES. SEC.	MASCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
96	3 to 1	195Ω CT	40Ω CT	IN-75	A-4212#	T20D78#	A-3123#	#Drill new mounting hole.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE PRI.	IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	MASCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
97	2500Ω CT	250Ω 125Ω 60Ω 4Ω 2Ω	62Ω CT	15Ω 10Ω 6.5Ω .9Ω .6Ω	0-75†				†Specify serial number when ordering replacement.

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MASCO PART No.		
98	Bayonet	6-8	0.25	Blue			Type 44
99	"	6-8	0.25	"			" "

MISCELLANEOUS

ITEM No.	PART NAME	MASCO PART No.	NOTES
100	Switch		On-Off
101	"		Impedence Selector
102	Fuse		5 Amp.

SPEAKERS

1. This amplifier is designed for use with PM speakers or PM re-entrant horns only. If electro-dynamic speakers are to be used a separate exciter supply must be employed.

   Determine the number of speakers required. Make sure that the sum of the power ratings of the speakers selected is approximately equal to the rated output of the amplifier, namely 75 watts. For example: If the speakers are rated at 15 watts each, 5 speakers are required for a 75 watt amplifier.

2. Connect the speakers or speaker lines to the output sockets through the use of one or two six-prong plugs. Pins #2 & #5 of the plugs should be used for the connections. Note that both output sockets are internally connected in parallel.

   For running voice coil cables use wire #18 or heavier, twisted or parallel. For cable lengths exceeding 75 feet use the "line" impedance taps and employ "line" matching transformers on the speakers.

3. Select the proper output impedance by rotating the impedance selector until the desired impedance tap is visible through the small opening in the selector.

   DO NOT ROTATE THE SELECTOR WHILE THE AMPLIFIER IS OPERATING.

   The proper impedance tap to be used is determined by the impedance of the speakers or lines, the number of speakers or lines and method of connection. The tap setting for speakers (or lines) of the same impedance connected in parallel is equal to the impedance of one speaker or line divided by the total number of such speakers (or lines). Thus four 15 ohm trumpet speakers in parallel should be connected to 15/4 = 3-3/4 ohms (use 4 ohm setting). Similarly two 500 ohm lines in parallel are connected to 250 ohms. In series operation of equal impedances the net impedance is equal to the impedance of one speaker or line times the total number. Thus four 4 ohm speakers in series equal 16 ohms (use 15 ohm tap).

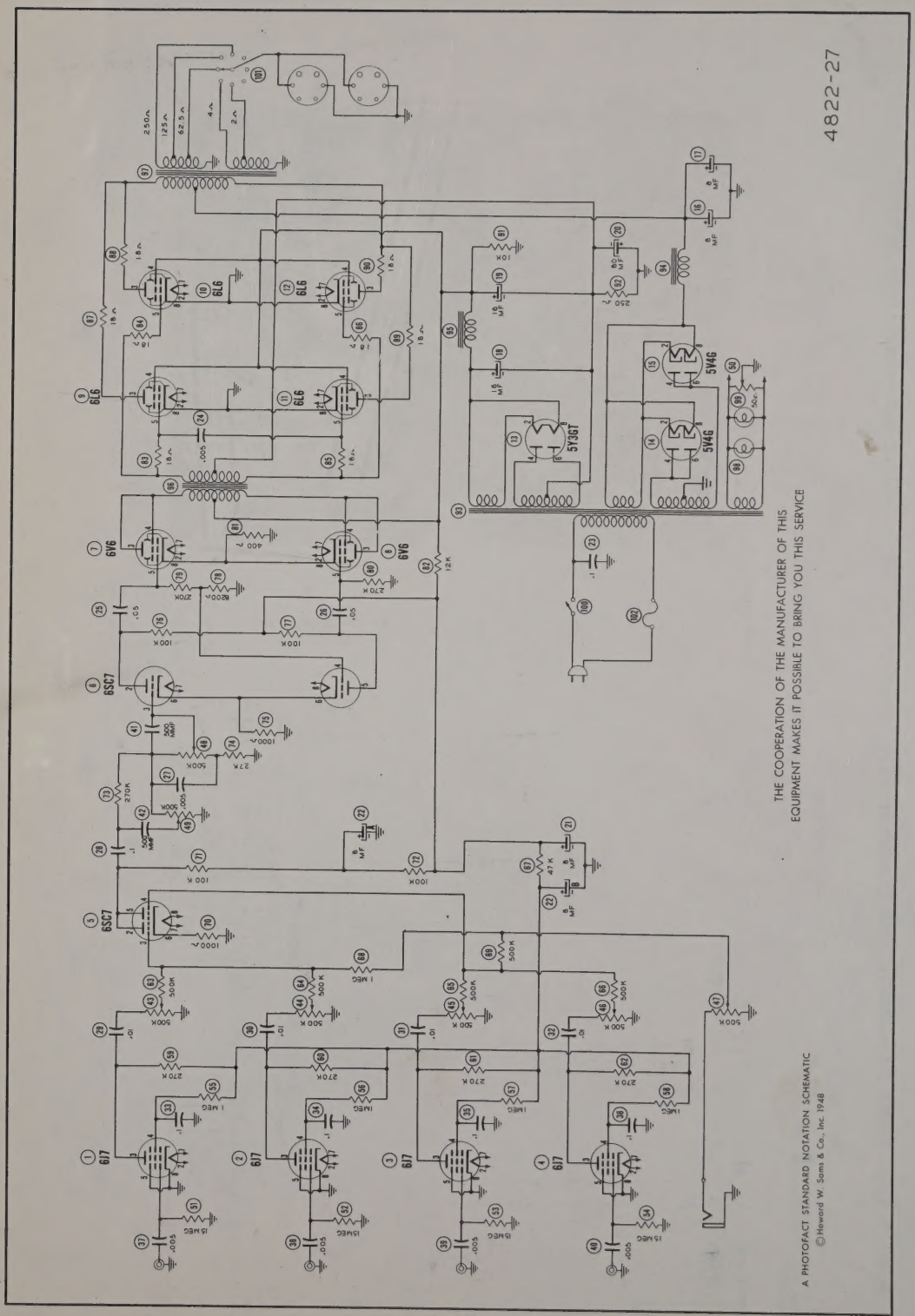
VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6J7	0V.	3.4VAC	21VDC	23VDC	0V.	0V.	3.4VAC	0V.	-.6VDC
2	6J7	0V.	3.4VAC	21VDC	23VDC	0V.	0V.	3.4VAC	0V.	-.6VDC
3	6J7	0V.	3.4VAC	21VDC	23VDC	0V.	0V.	3.4VAC	0V.	-.6VDC
4	6J7	0V.	3.4VAC	21VDC	23VDC	0V.	0V.	3.4VAC	0V.	-.6VDC
5	6SC7	0V.	70VDC	0V.	0V.	70VDC	.8VDC	3.4VAC	3.4VAC	-
6	6SC7	0V.	160VDC	0V.	0V.	170VDC	1.8VDC	3.4VAC	3.4VAC	-
7	6V6GT	0V.	3.4VAC	307VDC	307VDC	0V.	150VDC	3.4VAC	23VDC	-
8	6V6GT	0V.	3.4VAC	307VDC	307VDC	0V.	0V.	3.4VAC	23VDC	-
9	6L6G	0V.	3.4VAC	360VDC	310VDC	-32VDC	-32VDC	3.4VAC	0V.	-
10	6L6G	0V.	3.4VAC	360VDC	310VDC	-32VDC	-32VDC	3.4VAC	0V.	-
11	6L6G	0V.	3.4VAC	360VDC	310VDC	-32VDC	-32VDC	3.4VAC	0V.	-
12	6L6G	0V.	3.4VAC	360VDC	310VDC	-32VDC	-32VDC	3.4VAC	0V.	-
13	5Y3GT	0V.	330VDC	0V.	315VAC	0V.	315VAC	0V.	330VDC	-
14	5V4G	0V.	380VDC	0V.	455VAC	0V.	455VAC	0V.	380VDC	-
15	5V4G	0V.	380VDC	0V.	455VAC	0V.	455VAC	0V.	380VDC	-

NOTE-6.8V AC ACROSS FILAMENT TERMINALS.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6J7	0Ω	10Ω	340KΩ	1.1 Meg.	0Ω	INF.	10Ω	0Ω	15 Meg.
2	6J7	0Ω	10Ω	340KΩ	1.1 Meg.	0Ω	INF.	10Ω	0Ω	15 Meg.
3	6J7	0Ω	10Ω	340KΩ	1.1 Meg.	0Ω	INF.	10Ω	0Ω	15 Meg.
4	6J7	0Ω	10Ω	340KΩ	1.1 Meg.	0Ω	INF.	10Ω	0Ω	15 Meg.
5	6SC7	0Ω	220KΩ	470KΩ	470KΩ	220KΩ	1KΩ	10Ω	10Ω	-
6	6SC7	0Ω	120KΩ	8.2KΩ	30KΩ	120KΩ	1KΩ	10Ω	10Ω	-
7	6V6GT	0Ω	10Ω	10KΩ	10KΩ	270KΩ	130KΩ	10Ω	400Ω	-
8	6V6GT	0Ω	10Ω	10KΩ	10KΩ	270KΩ	INF.	10Ω	400Ω	-
9	6L6G	0Ω	10Ω	380KΩ	10KΩ	280Ω	270Ω	10Ω	0Ω	-
10	6L6G	0Ω	10Ω	380KΩ	10KΩ	280Ω	270Ω	10Ω	0Ω	-
11	6L6G	0Ω	10Ω	380KΩ	10KΩ	280Ω	270Ω	10Ω	0Ω	-
12	6L6G	0Ω	10Ω	380KΩ	10KΩ	280Ω	270Ω	10Ω	0Ω	-
13	5Y3GT	INF.	10KΩ	INF.	300Ω	INF.	290Ω	INF.	10KΩ	-
14	5V4G	INF.	380KΩ	INF.	27Ω	INF.	27Ω	INF.	380KΩ	-
15	5V4G	INF.	380KΩ	INF.	29Ω	INF.	29Ω	INF.	380KΩ	-

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages meaured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

STAGE GAIN MEASUREMENTS		
MIC. AMP. 1	80X	400 ∿
MIC. AMP. 2	80X	400 ∿
MIC. AMP. 3	80X	400 ∿
MIC. AMP. 4	80X	400 ∿
MIXER	10X	400 ∿
AF	30X	400 ∿
DRIVER	10X	400 ∿
TRANSFORMER	.5X	400 ∿
OUTPUT	10X	400 ∿